LEVEL

DAVID W. TAYLOR NAVAL SHIP
RESEARCH AND DEVELOPMENT CENTER

Bethesda, Maryland 20084

COMPUTER CENTER
CDC LIBRARIES/UTILITY
(PROGRAMS)

by

David V. Sommer

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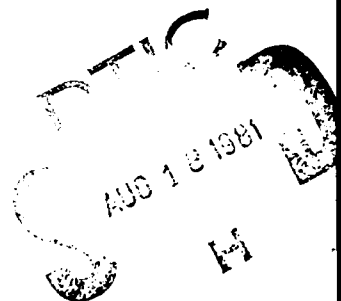Computation, Mathematics and Logistics Department
Departmental Report

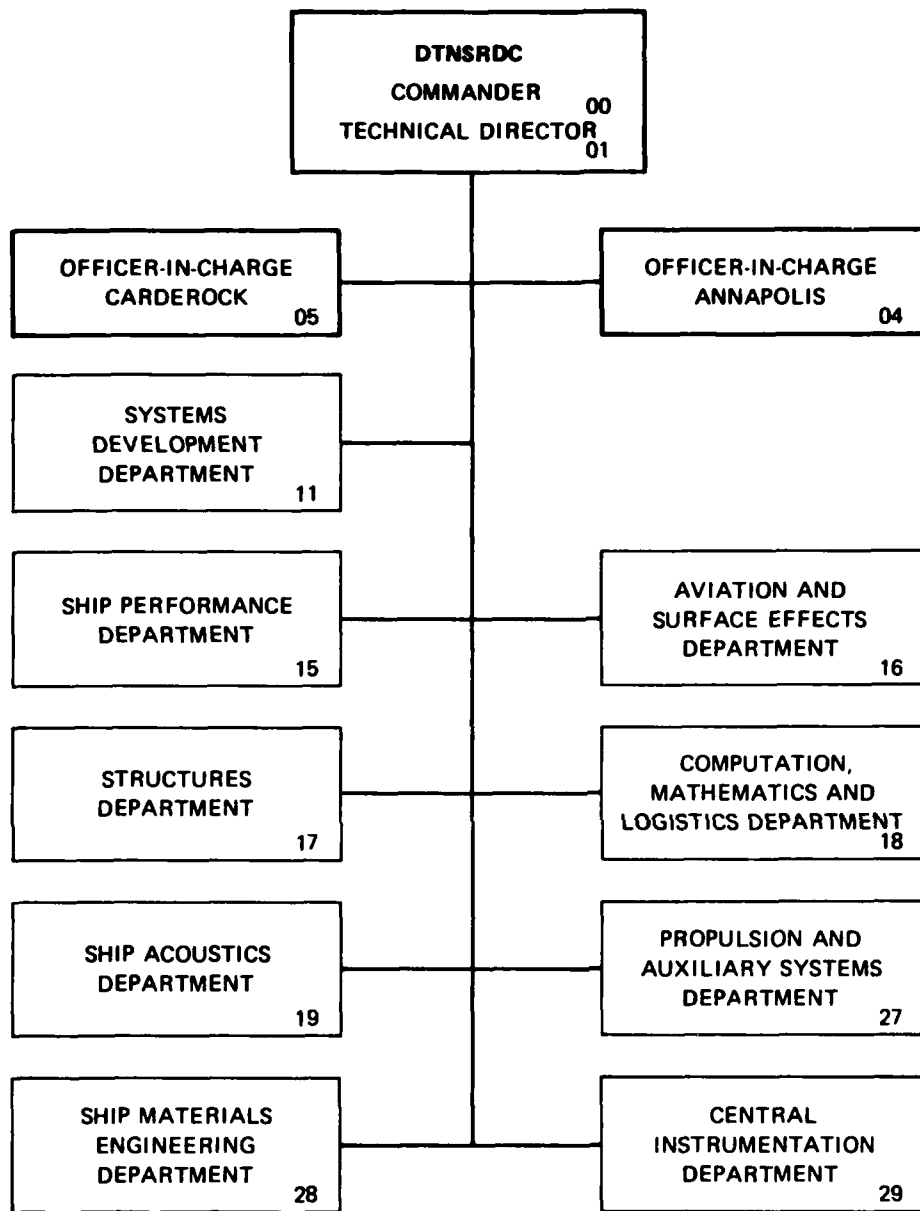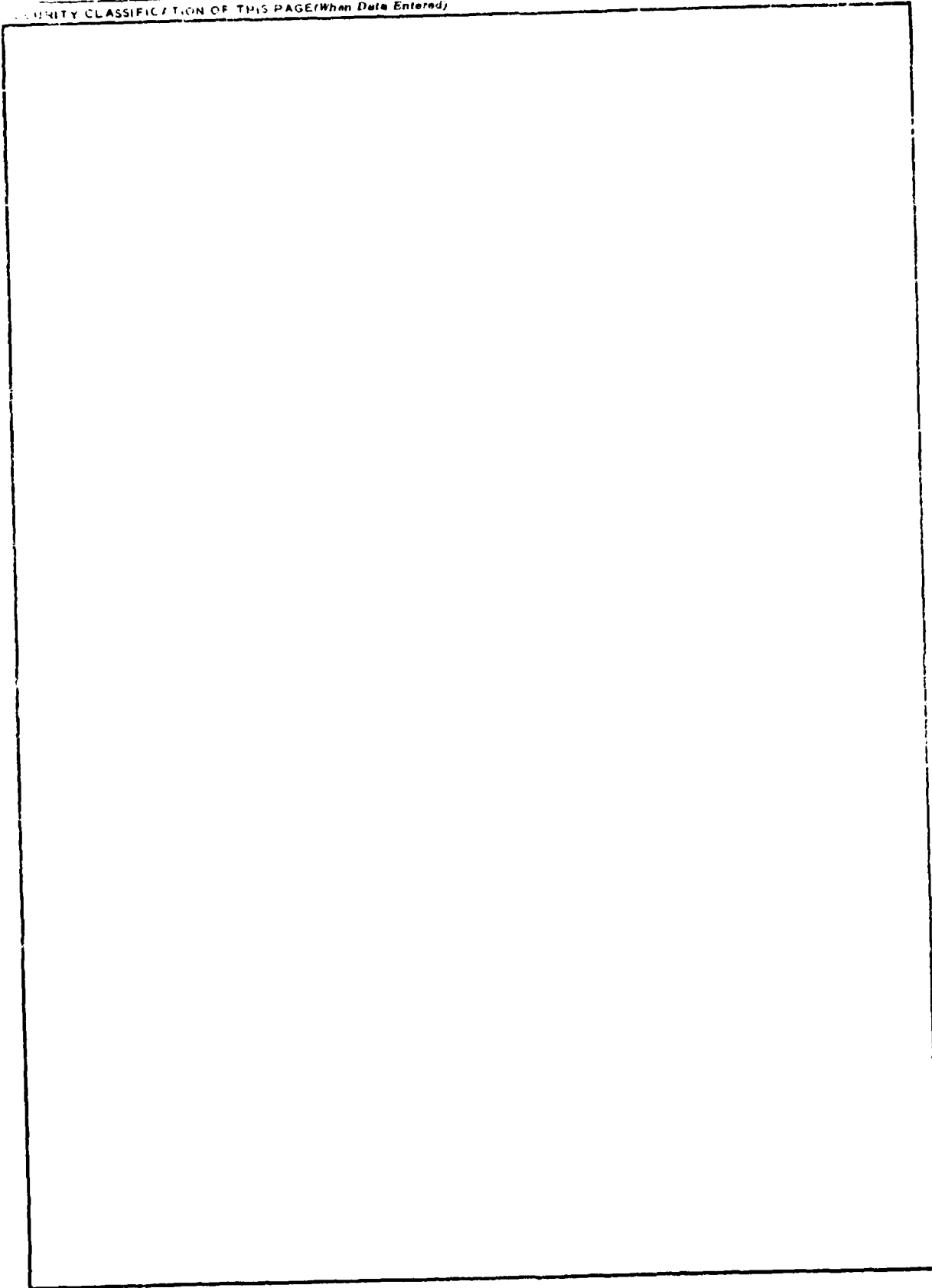February 1981   CMLD-81-09

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MAJOR DTNSRDC ORGANIZATIONAL COMPONENTS

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                    │      DTNSRDC         │
                    │   COMMANDER      00  │
                    │ TECHNICAL DIRECTOR   │
                    │                  01  │
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┌─────────────────────┐   ┌─────────────────────┐
│ OFFICER-IN-CHARGE   │   │ OFFICER-IN-CHARGE   │
│   CARDEROCK   │   │   ANNAPOLIS   │
│   05   │   │   04   │
└─────────────────────┘   └─────────────────────┘

┌─────────────────────┐
│   SYSTEMS   │
│   DEVELOPMENT   │
│   DEPARTMENT   11 │
└─────────────────────┘

┌─────────────────────┐   ┌─────────────────────┐
│ SHIP PERFORMANCE   │   │   AVIATION AND   │
│   DEPARTMENT   │   │ SURFACE EFFECTS   │
│   15   │   │   DEPARTMENT   16 │
└─────────────────────┘   └─────────────────────┘

┌─────────────────────┐   ┌─────────────────────┐
│   STRUCTURES   │   │   COMPUTATION,   │
│   DEPARTMENT   │   │ MATHEMATICS AND   │
│   17   │   │ LOGISTICS DEPARTMENT │
│   │   │   18 │
└─────────────────────┘   └─────────────────────┘

┌─────────────────────┐   ┌─────────────────────┐
│   SHIP ACOUSTICS   │   │   PROPULSION AND   │
│   DEPARTMENT   │   │ AUXILIARY SYSTEMS   │
│   19   │   │   DEPARTMENT   27 │
└─────────────────────┘   └─────────────────────┘

┌─────────────────────┐   ┌─────────────────────┐
│   SHIP MATERIALS   │   │   CENTRAL   │
│   ENGINEERING   │   │ INSTRUMENTATION   │
│   DEPARTMENT   28 │   │   DEPARTMENT   29 │
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER CMLD-81-09 ✓	2 GOVT ACCESSION NO. AD-A103 030	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Computer Center CDC Libraries/UTILITY (Programs) ·		5. TYPE OF REPORT & PERIOD COVERED Final
		6 PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) David V. Sommer		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS David Taylor Naval Ship R&D Center User Services, Code 1892 Bethesda, Maryland 20084		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Computation, Mathematics & Logistics Department Computer Facilities Division (189)		12. REPORT DATE February 1981
		13. NUMBER OF PAGES 185
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Computer Programs, Functional Categories, Library File, Utilities,
Software Documentation

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Computer Center CDC Libraries/Utility (Programs), CLIB/U is a reference
manual which describes the programs in library "UTILITY" on the CDC 6000/
Cyber 74 computers. These programs are utilities such as tape and disk
dumps, listers, selective copies, document generators/printers, card
reformatters, library maintenance. CLIB/U lists programs by functional
category and alphabetically with a descriptive title. All machine-readable
documents detailing the use of these programs are included.

DD FORM 1473 EDITION OF 1 NOV 65 IS OBSOLETE
1 JAN 73
S N 0102-014-6601

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DAVID W. TAYLOR
NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER
BETHESDA, MARYLAND 20084

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        *              COMPUTER CENTER                         *
        *          CDC LIBRARIES / UTILITY                     *
        *               (PROGRAMS)                             *
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BY
DAVID V SOMMER

USER SERVICES BRANCH
CODE 1892

COMPUTATION, MATHEMATICS AND LOGISTICS DEPARTMENT
DEPARTMENTAL REPORT

FEBRUARY 1981   CMLD-81-09

THROUGH REVISION 0 (FEB 1981)

TABLE OF CONTENTS

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* - A LISTING OF THE DOCUMENTS IS NOT INCLUDED IN THIS TABLE OF
    CONTENTS (SEE PAGE 1-7). AS NEW ROUTINES ARE DEVELOPED, THEY WILL
    BE INSERTED ALPHABETICALLY INTO THIS DOCUMENT AND MAY BE PRINTED ON
    THE COMPUTER.

***** INTRODUCTION *****

THE COMPUTER CENTER MAKES AVAILABLE ON THE CDC COMPUTERS, IN ADDITION TO THE NOS/BE OPERATING SYSTEM, A WIDE VARIETY OF BOTH SCIENTIFIC AND UTILITY PROGRAMS, SUBPROGRAMS AND CATALOGUED PROCEDURES. MOST OF THE ROUTINES ARE MAINTAINED IN LIBRARIES ON PERMANENT FILES AND MAY BE INVOKED BY THE APPROPRIATE (LOADER) CONTROL CARDS. A FEW PROGRAMS ARE AVAILABLE AS INDEPENDENT PERMANENT FILES.

THE CLIB-SERIES OF MANUALS CONSISTS OF THE FOLLOWING, WHICH DESCRIBE THE CONTENTS OF THE VARIOUS CDC 6000 LIBRARIES MAINTAINED BY THE COMPUTER CENTER:

```
     CLIB   - COMPUTER CENTER CDC LIBRARIES                    CMLD-81-06
     CLIB/N - COMPUTER CENTER CDC LIBRARIES/NSRDC
              (SUBPROGRAMS)                                    CMLD-81-07
     CLIB/P - COMPUTER CENTER CDC LIBRARIES/PROCFIL
              (PROCEDURES)                                     CMLD-81-08
     CLIB/U - COMPUTER CENTER CDC LIBRARIES/UTILITY
              (PROGRAMS)                                       CMLD-81-09
     CLIB/M - COMPUTER CENTER CDC LIBRARIES/MNSRDC
              (PROGRAMS)
```

THIS MANUAL, CLIB/U, IS A REFERENCE MANUAL WHICH DESCRIBES MOST OF PROGRAMS IN LIBRARY 'UTILITY'.

*** HOW TO USE THIS MANUAL ***

THE PROGRAMS ARE CLASSIFIED IN ONE OR MORE FUNCTIONAL CATEGORIES (SEE PAGE 1-2 FOR A LIST OF CATEGORIES). THEY ARE LISTED, BEGINNING ON PAGE 1-5, UNDER THE VARIOUS CATEGORIES. THE INDIVIDUAL PROGRAMS ARE LISTED, WITH DESCRIPTIVE TITLE, BEGINNING ON PAGE 1-7. CHAPTER 2 CONTAINS ALL CURRENTLY AVAILABLE MACHINE-READABLE DOCUMENTS DESCRIBING THE USE OF PROGRAMS IN LIBRARY 'UTILITY'.

*** LIBRARY UTILITY ***

'UTILITY' IS A LIBRARY OF DTNSRDC WRITTEN AND/OR SUPPORTED UTILITIES AND INCLUDES TAPE AND DISK DUMPS, LISTERS, SELECTIVE COPIES, DOCUMENT GENERATORS/PRINTERS, CARD REFORMATTERS, AND LIBRARY MAINTENANCE ROUTINES.

*** EXECUTING A PROGRAM ***

PROGRAMS IN THIS LIBRARY ARE EXECUTED IN ONE OF THE FOLLOWING WAYS:

```
        A) ATTACH,UTILITY.
           LIBRARY,UTILITY.      OR      LDSET,LIB=UTILITY.
           <PROG>,<PARAMETERS>.          WHERE <PROG> IS THE DESIRED
                                         PROGRAM

        B) BEGIN.UTILITY,,<PROG>,<PARAMETERS>.
```

*** FUNCTIONAL CATEGORIES ***

THE FOLLOWING FUNCTIONAL CATEGORIES ARE USED AT DTNSRDC. THOSE
CATEGORIES PRECEDED BY AN ASTERISK (*) ARE LOCAL DTNSRDC CATEGORIES.
THE OTHER ARE FROM THE VIM (CDC USERS GROUP) LIST.

    A0   ARITHMETIC ROUTINES
    A1   REAL NUMBERS
    A2   COMPLEX NUMBERS
    A3   DECIMAL
    A4   I/O ROUTINES

    B0   ELEMENTARY FUNCTIONS
    B1   TRIGONOMETRIC
    B2   HYPERBOLIC
    B3   EXPONENTIAL AND LOGARITHMIC
    B4   ROOTS AND POWERS

    C0   POLYNOMIALS AND SPECIAL FUNCTIONS
    C1   EVALUATION OF POLYNOMIALS
    C2   ROOTS OF POLYNOMIALS
    C3   EVALUATION OF SPECIAL FUNCTIONS (NON-STATISTICAL)
    C4   SIMULTANEOUS NON-LINEAR ALGEBRAIC EQUATIONS
    C5   SIMULTANEOUS TRANSCENDENTAL EQUATIONS
  * C6   ROOTS OF FUNCTIONS

    D0   OPERATIONS ON FUNCTIONS AND SOLUTIONS OF DIFFERENTIAL EQUATIONS
    D1   NUMERICAL INTEGRATION
    D2   NUMERICAL SOLUTIONS OF ORDINARY DIFFERENTIAL EQUATIONS
    D3   NUMERICAL SOLUTIONS OF PARTIAL DIFFERENTIAL EQUATIONS
    D4   NUMERICAL DIFFERENTIATION

    E0   INTERPOLATION AND APPROXIMATIONS
    E1   TABLE LOOK-UP AND INTERPOLATION
    E2   CURVE FITTING
    E3   SMOOTHING
    E4   MINIMIZING OR MAXIMIZING A FUNCTION

    F0   OPERATIONS ON MATRICES, VECTORS & SIMULTANEOUS LINEAR EQUATIONS
    F1   VECTOR AND MATRIX OPERATIONS
    F2   EIGENVALUES AND EIGENVECTORS
    F3   DETERMINANTS
    F4   SIMULTANEOUS LINEAR EQUATIONS

    G0   STATISTICAL ANALYSIS AND PROBABILITY
    G1   DATA REDUCTION (COMMON STATISTICAL PARAMETERS)
    G2   CORRELATION AND REGRESSION ANALYSIS
    G3   SEQUENTIAL ANALYSIS
    G4   ANALYSIS OF VARIANCE
    G5   TIME SERIES
    G6   SPECIAL FUNCTIONS (INCLUDES RANDOM NUMBERS AND PDF'S)
  * G7   MULTIVARIATE ANALYSIS AND SCALE STATISTICS
  * G8   NON-PARAMETRIC METHODS AND STATISTICAL TESTS
  * G9   STATISTICAL INFERENCE

H0   OPERATIONS RESEARCH TECHNIQUES, SIMULATION & MANAGEMENT SCIENCE
H1   LINEAR PROGRAMMING
H2   NON-LINEAR PROGRAMMING
H3   TRANSPORTATION AND NETWORK CODES
H4   SIMULATION MODELING
H5   SIMULATION MODELS
H6   CRITICAL PATH PROGRAMS
H8   AUXILIARY PROGRAMS
H9   COMBINED

I0   INPUT
I1   BINARY
I2   OCTAL
I3   DECIMAL
I4   BCD (HOLLERITH)
I9   COMPOSITE

J0   OUTPUT
J1   BINARY
J2   OCTAL
J3   DECIMAL
J4   BCD (HOLLERITH)
J5   PLOTTING
J7   ANALOG
J9   COMPOSITE

K0   INTERNAL INFORMATION TRANSFER
K1   EXTERNAL-TO-EXTERNAL
K2   INTERNAL-TO-INTERNAL (RELOCATION)
K3   DISK
K4   TAPE
K5   DIRECT DATA DEVICES

L0   EXECUTIVE ROUTINES
L1   ASSEMBLY
L2   COMPILING
L3   MONITORING
L4   PREPROCESSING
L5   DISASSEMBLY AND DERELATIVIZING
L6   RELATIVIZING
L7   COMPUTER LANGUAGE TRANSLATORS

M0   DATA HANDLING
M1   SORTING
M2   CONVERSION AND/OR SCALING
M3   MERGING
M4   CHARACTER MANIPULATION
M5   SEARCHING, SEEKING, LOCATING
M6   REPORT GENERATORS
M9   COMPOSITE

N0   DEBUGGING
N1   TRACING AND TRAPPING
N2   DUMPING
N3   MEMORY VERIFICATION AND SEARCHING
N4   BREAKPOINT PRINTING

00 SIMULATION OF COMPUTERS AND DATA PROCESSORS (INTERPRETERS)
01 OFF-LINE EQUIPMENT (LISTERS, REPRODUCERS, ETC.)
03 COMPUTERS
04 PSEUDO-COMPUTERS
05 SOFTWARE SIMULATION OF PERIPHERALS
09 COMPOSITE

P0 DIAGNOSTICS (HARDWARE MALFUNCTION)

Q0 SERVICE OR HOUSEKEEPING, PROGRAMMING AIDS
Q1 CLEAR/RESET
Q2 CHECKSUM ACCUMULATION AND CORRECTION
Q3 REWIND, TAPE MARK, LOAD CARDS, LOAD TAPE PROGRAMS, ETC.
Q4 INTERNAL HOUSEKEEPING, SAVE, RESTORE, ETC.
Q5 REPORT GENERATOR SUBROUTINES
Q6 PROGRAM DOCUMENTATION: FLOW CHARTS, DOCUMENT, STANDARDIZATION
Q7 PROGRAM LIBRARY UTILITIES

R0 LOGIC AND SYMBOLIC
R1 FORMAL LOGIC
R2 SYMBOL MANIPULATION
R3 LIST AND STRING PROCESSING
R4 TEXT EDITING

S0 INFORMATION RETRIEVAL

T0 APPLICATIONS AND APPLICATION-ORIENTED PROGRAMS
T1 PHYSICS (INCLUDING NUCLEAR)
T2 CHEMISTRY
T3 OTHER PHYSICAL SCIENCES (GEOLOGY, ASTRONOMY, ETC.)
T4 ENGINEERING
T5 BUSINESS DATA PROCESSING
T6 MANUFACTURING (NON-DATA) PROCESSING AND PROCESS CONTROL
T7 MATHEMATICS AND APPLIED MATHEMATICS
T8 SOCIAL AND BEHAVIORAL SCIENCES AND PSYCHOLOGY
T9 BIOLOGICAL SCIENCES
T10 REGIONAL SCIENCES (GEOGRAPHY, URBAN PLANNING)
T11 COMPUTER ASSISTED INSTRUCTION

U0 LINGUISTICS AND LANGUAGES

V0 GENERAL PURPOSE UTILITY SUBROUTINES
V1 RANDOM NUMBER GENERATORS
V2 COMBINATORIAL GENERATORS: PERMUTATIONS, COMBINATIONS & SUBSETS
* V3 STANDARD AND SPECIAL PROBLEMS

X0 DATA REDUCTION
X1 RE-FORMATTING, DECOMMUTATION, ERROR DIAGNOSIS
X2 EDITING
X3 CALIBRATION
X4 EVALUATION
X5 ANALYSIS (TIME-SERIES ANALYSIS)
X6 SIMULATION (GENERATE TEST DATA FOR DATA REDUCTION SYSTEM)

Y0 INSTALLATION MODIFICATION
Y1 INSTALLATION MODIFICATION LIBRARY
Y2 NEWPL TAPE OF INSTALLATION MODIFICATIONS

Z0 ALL OTHERS

***   LIST OF PROGRAMS BY CATEGORY   ***

THE PROGRAMS IN LIBRARY 'UTILITY' ARE LISTED BELOW UNDER THEIR
FUNCTIONAL CATEGORIES. AN ALPHABETICAL LIST, WITH A BRIEF DESCRIPTION
OF EACH PROGRAM BEGINS ON PAGE 1-7.

J1 BINARY
      CV029

J4 BCD (HOLLERITH)
      BANNER   BANNER3
      BANNERS   BANNER6

J9 COMPOSITE
      HEXDMP   PRUDMP   TAPDMP

K1 EXTERNAL-TO-EXTERNAL
      COPYRE   DOCUMNT
      COPYSEL   PROMNT

K3 DISK
      COPYLIB   NEWNAME
      GETOBJ   PRUDMP

K4 TAPE
      AUDPFT   HEXDMP   TAPDMP

M0 DATA HANDLING
      COMPAR

M1 SORTING
      AUDSORT   DEKSORT

M2 CONVERSION AND/OR SCALING
      CV029

M4 CHARACTER MANIPULATION
      ASCDC   COPYEXT

M6 REPORT GENERATORS
      PR2UP

N2 DUMPING
      DMPFIL   PRUDMP
      HEXDMP   TAPDMP

O1 OFF-LINE EQUIPMENT (LISTERS, REPRODUCERS, ETC.)
      CARDS   GETREV   LIST2
      CARDS2   LINERL   LIST3
      COPYEXT   LISTCMP   LIST4
      COPYRE   LISTEOI   MANUAL
      COPYSEL   LISTN   PAGEPRT
      CV029   LISTZ   PR2UP
      FRAME   LIST1

Q0   SERVICE OR HOUSEKEEPING, PROGRAMMING AIDS
         AUDPFT   CBLFMT   LINERL
         BANNER   DFDATIM   PTIM
         BANNERS   EOFAD   S2KRNM
         BANNER3   FRAME   WHATLIB
         BANNER6   JOBTIME   WHICHMF
         CALCIBL   LINER   WHICHOS

Q3   FILE MANIPULATION
         EDI

Q6   PROGRAM DOCUMENTATION: FLOW CHARTS, DOCUMENT STANDARDIZATION
         DOC   EXECARD   PROGDOC
         DOCDAT   MANYDOC   PURPOSE
         DOCIT   MTDOC   TAPLIST
         DOCUMNT   PFDOC   UNDOCIT

Q7   PROGRAM LIBRARY UTILITIES
         BINDEX   DEKSORT   PROMNT
         DECK   LISTBIN   REDECK
         DECKLST   LISTCMP   SORTUP

S0   INFORMATION RETRIEVAL
         AUDPFT   GETREV   PROMNT
         AUDSORT   MANUAL   PURPOSE
         DOCDAT   MANYDOC   TAPLIST
         DOCUMNT   PAGEPRT
         EXECARD   PROGDOC

*** DESCRIPTIVE TITLES ***

PROGRAMS IN LIBRARY 'UTILITY' ARE LISTED ALPHABETICALLY BELOW.

ASCDC   CONVERT 7-BIT ASCII FILE TO 6-BIT CDC AND VICE VERSA

AUDPFT   PRODUCE MINI-AUDIT OF USER PFDUMP TAPES CREATED BY SELDUMP
           OR PRIVATE PACK PFDUMP

AUDSORT   SORT OUTPUT FROM USER AUDIT

BANNER   PRINT A BANNER (PAGE)

BANNERS   PRINT 1 TO 8 BANNERS ON ONE PAGE

BANNER3   PRINT 3 BANNERS ON ONE PAGE (LETTERS ARE 10 LINES HIGH)

BANNER6   PRINT 1-6 BANNERS ON ONE PAGE (LETTERS ARE 6 LINES HIGH)

BINDEX   GIVE LIST AND SORTED LIST OF OUTPUT OF EDITLIB 'LISTLIB' AND
           'CONTENT' DIRECTIVES

CALCIBL   CALCULATE BEST BLOCK LENGTHS (I.E., MINIMUM TIME REQUIRED FOR
           RANDOM ACCESS AND MINIMUM BUFFER SIZE) FOR INDEX SEQUENTIAL
           FILE

CARDS   REPRODUCE A BCD DECK WITH MODIFICATONS. (FIELDS MAY BE
           MOVED, DELETED, INTERCHANGED, GANG PUNCHED AND/OR SEQUENCED)

CARDS2   REPRODUCE A BCD DECK WITH MODIFICATIONS. (FIELDS MAY BE
           COPIED, MOVED, DELETED, INTERCHANGED, GANG PUNCHED AND/OR
           SEQUENCED.)

CBLFMT   REFORMAT A COBOL SOURCE PROGRAM TO ENHANCE ITS READABILITY,
           THEREBY MAKING IT EASIER TO UNDERSTAND AND MODIFY

COMPAR   COMPARE TWO TEXT FILES AND REPORT ANY DIFFERENCES

COPYEXT   COPY UNIT RECORDS (ZERO BYTE TERMINATED) EXTRACTING SPECIFIED
           COLUMNS AND OPTIONALLY MOVING THEM AND OPTIONALLY ADD EDITOR
           SEQUENCING

COPYLIB   FROM AN EDITLIB LISTLIB LISTING, CREATE SORTED (OR UNSORTED)
           DIRECTIVES TO COPY AN EDITLIB USER LIBRARY

COPYRE   COPY AND REARRANGE FILE OF ZERO BYTE TERMINATED RECORDS (150
           CHARACTERS MAXIMUM PER RECORD; FILE PROCESSED IN CORE)

COPYSEL   COPY AND REARRANGE FILE OF ZERO BYTE TERMINATED RECORDS (150
           CHARACTERS MAXIMUM PER RECORD; FILE PROCESSED DIRECTLY)

CV029   CONVERT TO 029 PUNCH CODE

DECK   LIST UPDATE 'SOURCE' FILE DECK/COMDECK NAMES, SEQUENCE NUMBER
           AND NUMBER OF CARDS

DECKLST   LIST UPDATE 'SOURCE' FILE DECK/COMDECK NAMES, SEQUENCE
           NUMBER, NUMBER OF CARDS, NUMBER OF LINES AND PAGES (IF COLUMN
           1 CARRIAGE CONTROL IS USED).   (LIST CONTENTS OF A
           DOCUMENTATION FILE)

DEKSORT   SORT IDENT AND DECK LISTINGS FROM UPDATE OUTPUT FILE

DFDATIM   PUT DATE/TIME INTO DAYFILE

DMPFIL   DUMP FIRST N WORDS OF EACH LOGICAL RECORD IN M FILES

DOC   PREPARE (SUB)PROGRAM AND CATALOGUED PROCEDURE DOCUMENTATION

DOCDAT   LIST DOCUMENT NAMES, DATES AND PAGE NUMBERS

DOCIT   ADD PAGING TO ONE OR MORE DOCUMENTS

DOCUMNT   MAINTAIN A FILE OF DOCUMENTS

EOFAD   ADD OR DELETE EOF'S TO/FROM A FILE (THRU EOI)

EOI   POSITION A FILE AT END-OF-INFORMATION (EOI)

EXECARD   EXTRACT EXECUTE CARD PARAMETER/SUBPROGRAM USAGE/PROCEDURE
           USAGE INFORMATION FROM DOCUMENTATION FILES (WHICH WERE
           PREPARED IN THE FORMAT GENERATED BY PROGRAM 'DOC')

FRAME   PRINT A FRAME FOR LINING UP PRINTOUTS

GETOBJ   EXTRACT ONE OBJECT MODULE FROM A SEQUENTIAL OBJECT FILE OR AN
           EDITLIB USER LIBRARY

GETREV   EXTRACT ALL PAGES FROM A MANUAL WHICH WERE MODIFIED AFTER
           USER-SPECIFIED DATE

HEXDMP   DUMP 9-TRACK TAPE IN HEXADECIMAL FORMAT

JOBTIME   PUT JOB CP EXECUTION TIME TO THIS POINT INTO DAYFILE

LINER   COUNT LINES AND PAGES OF A FILE HAVING FIRST CHARACTER
           CARRIAGE CONTROL

LINERL   LIST A DOCUMENT (CARRIAGE CONTROL IN COLUMN 1, ZERO BYTE
           TERMINATED RECORDS) WITH RECORD COUNT AND COUNT OF LINES ON
           EACH PAGE.   LIST THRU END-OF-INFORMATION.

LISTBIN   LIST BINARY MODULES AND PROCEDURES IN ONE OR MORE FILES

LISTCMP   LIST AN UPDATE COMPILE FILE, EACH DECK BEGINNING ON A NEW
           PAGE WITH A BANNER PAGE PRECEDING IT

LISTEOI   LIST A FILE INSERTING *EOR, *EOF, *EOI WHERE APPROPRIATE

LISTN   NUMBERED LIST OF ONE FILE OF ZERO-BYTE TERMINATED RECORDS

LISTZ   LIST ZERO-BYTE TERMINATED RECORDS WITH RECORD NUMBER AND
         LENGTHS (USER MAY SPECIFY MAXIMUM NUMBER OF CHARACTERS TO
         READ (DEFAULT: 140) AND PRINT (DEFAULT: 110)

LIST1   LIST (CENTERED) ONE COPY OF CARDS (UP TO 90 CHARACTERS)
         HAVING CARRIAGE CONTROL IN COLUMN 1. OPTIONALLY PRINT CARD,
         PAGE AND LINE COUNTS AND LINE LENGTHS.

LIST2   SINGLE/DOUBLE SPACE LISTING, 6 OR 8 LINES PER INCH, WITH
         OPTIONAL SKIP OVER PERFORATION AT BOTTOM OF PAGE (FIRST 120
         CHARACTERS)

LIST3   LIST FIRST (UP TO 90-CHARACTER, ZERO BYTE TERMINATED) RECORD
         IN EACH LOGICAL RECORD THROUGH EOI

LIST4   LIST UNIT RECORDS, THRU EOI, WHICH HAVE '1' IN COLUMN 1

MANUAL   EXTRACT (PRINT) REVISION PAGES FROM A MANUAL

MANYDOC EXTRACT (PRINT) TWO OR MORE DOCUMENTS FROM A DOCUMENT FILE

MTDOC   CREATE DOCUMENTATION TO DESCRIBE THE CONTENTS OF A MAGNETIC
         TAPE

NEWNAME RENAME A SIMPLE ABSOLUTE MODULE

PAGEPRT PRINT SELECTED PAGE(S) FROM A DOCUMENT

PFDOC   CREATE PERMANENT FILE DOCUMENTATION

PROGDOC EXTRACT (PRINT) ONE OR ALL DOCUMENT(S) FROM A DOCUMENT FILE

PROMNT   MAINTAIN AN ALPHABETICAL, SEQUENTIAL PROCEDURE FILE

PRUDMP   OCTAL AND CHARACTER DUMP OF DISK FILE BY RELATIVE PRU NUMBER

PR2UP   REFORMAT A SINGLE-COLUMN REPORT FILE COMPOSED OF 60-CHARACTER
         LINES INTO A DOUBLE-COLUMN FORMAT HAVING A MAXIMUM TOTAL LINE
         LENGTH OF 132 PRINTABLE CHARACTERS (PLUS 1 POSITION FOR
         CARRIAGE CONTROL). THE OUTPUT WILL BE SUITABLE FOR PRINTING
         EITHER ON A LINE PRINTER OR ON XEROX 8-1/2 X 11 PAPER.

PTIM   PRINT CPA, CPB, CPA+CPB, IO AND PP TIMES SINCE START OF JOB
         OR INTERCOM SESSION

PURPOSE EXTRACT PURPOSE INFORMATION FROM DOCUMENTATION FILES (WHICH
         WERE PREPARED IN THE FORMAT GENERATED BY PROGRAM 'DOC')

REDECK   CHANGE AN UPDATE COMPILE FILE BACK INTO A SOURCE FILE

SORTUP   GENERATE UPDATE DIRECTIVES TO SORT OLDPL

S2KRNM   RENAME ACCOUNT NUMBER ON CATALOGED S2000 DATA BASE FILES

TAPDMP   DUMP SELECTED PORTIONS OF A 7-TRACK MAGNETIC TAPE WRITTEN   IN
            AN UNKNOWN DENSITY AND/OR MODE.   IT IS CONTROLLED BY A SERIES
            OF   FREE-FIELD   CONTROL   CARDS   CONTAINING   ORDERS   FOR   THE
            DUMPING, SKIPPING OR BACKSPACING OF RECORDS OR FILES.

TAPLIST   PREPARE TWO LISTS FROM MAGTAPEDOCUMENTATION FILE: 1) LIST   OF
            TAPE NUMBER, LABEL, DENSITY, REMARKS AND DESCRIPTION FOR EACH
            TAPE DOCUMENTED IN FILE 2) LIST OF TAPE NUMBERS AND LABELS

UNDOCIT   REMOVE   THE   PAGING WHICH WAS ADDED TO DOCUMENT(S) BY PROGRAM
            'DOCIT'

WHATLIB   LIST LIBRARIES SPECIFIED ON LAST LIBRARY CARD

WHICHMF   TELL TELETYPE USER WHICH MAINFRAME HE IS USING

WHICHOS   TELL TELETYPE USER WHICH OPERATING SYSTEM HE IS USING

***** PROGRAM DOCUMENTATION *****

THIS CHAPTER CONTAINS THE DOCUMENTATION FOR ALL PROGRAMS IN
LIBRARY 'UTILITY' AS OF THE PUBLICATION DATE.

*** HOW TO PRINT A DOCUMENT ***

INDIVIDUAL DOCUMENTS MAY BE PRINTED USING:

        BEGIN,DOCGET,,UTILITY,,<PROG>,OUTPUT.

WHERE <PROG> IS THE DESIRED DOCUMENT.

SEVERAL DOCUMENTS MAY BE PRINTED AT ONE TIME USING:

```
        JOBNAME.
        CHARGE,,,,,
        BEGIN,UTILITY,,MANYDOC,UTILITY.
        '     7/8/9      EOR
        <PROG1>
        <PROG2>

           ...
        <PROGN>
        "     6/7/8/9    EOI
```

PROGRAM 'ASCDC'

PURPOSE
    CONVERT 7-BIT ASCII FILE TO 6-BIT CDC AND VICE VERSA

FUNCTIONAL CATEGORIES: M4

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    CDC 63-CHARACTER SET USED.

    5 7-BIT ASCII CHARACTERS PER CDC WORD; EACH 7-BIT CHARACTER
    OCCUPIES THE RIGHT-MOST 7 BITS OF EACH 12-BIT BYTE.

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   (FILE TO BE CONVERTED)
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ASCDC,......
        (DO SOMETHING WITH TAPE2)

    FROM TTY
        ATTACH,TAPE1,....   (FILE TO BE CONVERTED)
        BEGIN,UTILITY,,ASCDC.
        (DO SOMETHING WITH TAPE2)

    EXECUTE CARD PARAMETERS
        ASCDC,INFILE,OUTFILE,TYPE,OUTPUT.
            INFILE - INPUT FILE TO BE CONVERTED
                        (REWOUND BEFORE AND AFTER USE)
            OUTFILE - OUTPUT CONVERTED FILE
                        (PUT ON PF SPACE)
                        (REWOUND BEFORE AND AFTER CREATION)
            TYPE   - TYPE CONVERSION
                        OMITTED OR A2C - ASCII-TO-CDC
                        ANYTHING ELSE - CDC-TO-ASCII
            OUTPUT - LISTABLE OUTPUT (FTN ERROR MESSAGES)

    DEFAULT EXECUTE CARD
        ASCDC,TAPE1,TAPE2,A2C,OUTPUT.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 26000B
    FL NEEDED TO RUN : 16000B

ERROR MESSAGES
    INPUT FILE EMPTY
        NO INFORMATION IN INPUT FILE

```
INPUT/OUTPUT UNITS
    UNIT  #     LFN                          USE
    -------    -------    ----------------------------------------
               OUTPUT     LISTABLE OUTPUT (FTN ERROR MESSAGES)
               TAPE1      INPUT FILE TO BE CONVERTED
               TAPE2      OUTPUT CONVERTED FILE
               DAYFILE    PROGRAM ERROR MESSAGES
```

METHOD
    FOR ASCII-TO-CDC
        EACH 12 BITS (CONTAINING THE ASCII CHARACTER IN THE
        RIGHT-MOST 7 BITS) IS CONVERTED TO THE 6-BIT CDC
        EQUIVALENT. THE RESULTING LINES WILL BE HALF THE
        LENGTH OF THE ASCII LINES.
    FOR CDC-TO-ASCII
        EACH 6-BIT CDC CHARACTER IS CONVERTED TO ITS 7-BIT
        ASCII REPRESENTATION AND IS STORED IN THE RIGHT-MOST
        7 BITS OF EACH 12-BIT BYTE. THE RESULTING LINES ARE
        TWICE THE LENGTH OF THE CDC LINES.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE

```
        CLOSEM    ENDFILE    FILESQ    GET        IFETCH
        OPENM     PUT        STOREF    WEOR
```

    PART OF PROGRAM
        TRANAC - TRANSLATE FROM ASCII TO CDC
        TRANCA - TRANSLATE FROM CDC TO ASCII
    OTHERS
        GETCHA - EXTRACT CHARACTER FROM ARRAY
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        MOVSTR - MOVE CHARACTER STRING
        PUTCHA - INSERT CHARACTER INTO ARRAY
        REQUEST - REQUEST,TAPE2,*PF.
        TRAILBZ - CHANGE TRAILING BLANKS TO 00B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 03/04/77

DATE(S) REVISED
    04/18/79 - CHANGE NAME FROM ASCDC7 TO ASCDC
             - MOVE PROGRAM TO LIBRARY 'UTILITY'

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'AUDPFT'

PURPOSE
    PRODUCE MINI-AUDIT OF USER PFDUMP TAPES CREATED BY SELDUMP
    OR PRIVATE PACK PFDUMP

FUNCTIONAL CATEGORIES: Q0 S0 K4

LANGUAGE: FORTRAN IV EXTENDED

COMPUTER
    CDC 6000

REMARKS
    REQUIRES FULL OUTPUT LINE, LISTS CYCLE, ID, PFNAME, AC.
    EST, SD, CREATION DATE, RP, LAST ACCESS, LAST MOD. #
    ATTACHES, #EXTENDS, #MODIFIES, REEL NUMBER.
    (THE THREE DATES ARE JULIAN DAY, YEAR.)

    THE LAST FILE LISTED FOR A REEL PROBABLY SPANS ONTO THE NEXT
    REEL ALSO.

    THE LABEL CARD MAY REQUIRE 'V' OR 'E' PARAMETERS IF NOT THE
    FIRST REEL OR IF CREATED BEFORE LEVEL 508 OF NOS/BE.

EXECUTION
    FROM BATCH
        PAUSE CARD TO INDICATE REELS, IF MULTI-REEL
        VSN,TAPE24=....
        LABEL,TAPE24,L=$DUMPF TAPE- NEWS,F=S,D=HY,NORING,R.
        BEGIN,UTILITY,,AUDPFT.

    FROM TTY
        NOT EXECUTABLE INTERACTIVELY, REQUIRES TAPE.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 33000B
    FL NEEDED TO RUN : 17600B

OUTPUT DESCRIPTION
    OUTPUT CONTAINS MOST AUDIT FIELDS EXCEPT SIZE OF FILE.

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
24	TAPE24	INPUT PFDUMP SET
6	OUTPUT	MINI-AUDIT OUTPUT LISTING

METHOD
    READS PERMANENT FILE HEADERS FROM THE PFDUMP TAPES.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        BUFFERIN   SHIFT
    PART OF PROGRAM
        JOBNO

AUTHOR
    SHARON E. GOOD - DTNSRDC CODE 1892.1

DATE WRITTEN: 06/09/80

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        CARD DECK CODE 1892.1 (S GOOD)
    OBJECT
        EDI1LIB USER LIBRARY: UTILITY

PROGRAM 'AUDSORT'

PURPOSE
    SORT OUTPUT FROM USER AUDIT

FUNCTIONAL CATEGORIES: M1 SO

LANGUAGE: FORTRAN IV EXTENDED

COMPUTERS
    CDC 6000

REMARKS
    THIS PROGRAM IS NORMALLY EXECUTED USING PROCEDURE 'AUDIT'.

    THIS PROGRAM PROCESSES ALL AUDIT FORMATS, WHICH MAY BE MIXED
    IN ANY ORDER.

    THIS PROGRAM WILL SORT UP TO 8 FIELDS, DEPENDING UPON THE
    AUDIT FORMAT. THE FIELDS ARE DESCRIBED IN THE EXECUTE CARD
    PARAMETERS BELOW. FOR AN AC AUDIT, THE DEFAULT SORT FIELDS
    ARE 4A, 3A, 1A, 2D. FOR ALL OTHER AUDITS, THEY ARE 1A, 2D.

EXECUTION
    FROM BATCH AND TTY
        BEGIN,AUDIT,,<KEYWORD-PARAMETERS>.
           --OR--
        AUDIT,LF=TEMP,<KEYWORD-PARAMETERS>.
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.   OR   LIBRARY,UTILITY.
        AUDSORT,TEMP,OUTPUT,<SORT-OPTIONS>.

    EXECUTE CARD PARAMETERS
        AUDSORT,INFILE,OUTPUT,S1,S2,S3,S4,S5,S6,S7,S8,PL=.
            INFILE - INPUT FILE (OUTPUT OF AUDIT)
            OUTPUT - LISTABLE OUTPUT
            S1-S8   - SORT OPTIONS
                        (A=ASCENDING, D=DESCENDING)
                        1A/1D - PF NAME - ALL SORTS
                        2A/2D - CYCLE   - ALL SORTS
                        3A/3D - ID   - AC SORT ONLY
                        4A/4D - ACCOUNT - ID (AI=I) OR
                                SEG   - AC=JJJJJJJJ00
                        5A/5D - CREATED - AC OR ID (AI=I)
                        6A/6D - USED-ON - AC OR ID (AI=I)
                        7A/7D - # USES - AC OR ID (AI=I)
                        8A/8D - # PRUS - AC OR ID (AI=I)
            PL=   - PRINT LINE LIMIT

    DEFAULT EXECUTE CARD
        AUDSORT,TAPE1,OUTPUT,4A,3A,1A,2D,PL=5000. - AC AUDIT
        AUDSORT,TAPE1,OUTPUT,1A,2D,PL=5000.   - ALL OTHERS

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 52000B
        (PROGRAM ADJUSTS CORE AS REQUIRED)

ERROR MESSAGES
    ABEND
        PROGRAM TERMINATED ABNORMALLY (PROBABLY CAUSED BY THE
        USER)

    INPUT FILE EMPTY
        INPUT FILE HAS NO INFORMATION IN IT

    F   UNDEFINED KEY(S)
        SORT/MERGE MESSAGE. NO SORT KEYS WERE DEFINED. ALL
        USER-SPECIFIED SORTS WERE INVALID. RE-EXECUTE WITH VALID
        SORT OPTIONS OR DEFAULTS.

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	OUTPUT	LISTABLE OUTPUT
	TAPE1	INPUT FILE (AUDIT OUTPUT FILE)
		REWOUND BEFORE AND AFTER USE
	ZZZWORK	WORK FILE FOR SORT/MERGE
		(RETURNED AT END-OF-PROGRAM)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   FILESQ   GET   IFETCH
        OPENM   OR   PUT   RECOVC   REMARK
        REWND   SHIFT   SKIP   SMEND   SMFILE
        SMKEY   SMOPT   SMOWN   SMRTN   SMSORT
    PART OF PROGRAM
        ABORT   - NON-EXISTENT ROUTINE TO FORCE ABORT
        EOJ   - ABNORMAL TERMINATION ROUTINE
        FAUDVAL - VALIDATE AUDIT HEADER LINE
        HEADER   - PROCESS HEADER RECORDS
        ISHDR   - IS IT FIRST LINE OF AUDIT OUTPUT?
        OUT3   - OUTPUT ROUTINE FOR SORT/MERGE
        PRINT1   - PRINT SINGLE AUDIT ENTRY
        SORT1   - SORT-KEYS FOR AUDIT AI=S FORMAT
        SORT2   - SORT-KEYS FOR AUDIT AI=I ID FORMAT
        SORT3   - SORT-KEYS FOR AUDIT AI=I AC FORMAT
        SORT4   - SORT-KEYS FOR AUDIT AI=P AND AI=F FORMATS
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        MOVEIT - MOVE AN ARRAY
        MOVSTR - MOVE CHARACTER STRING
        REPLAC - CHARACTER REPLACEMENT

ARITHMETIC STATEMENT FUNCTIONS
    AORD   - TEST FOR 'A' OR 'D'
    A12FMT   - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    I74FMT   - FAST I-FORMAT DECODE
    L11FMT   - FAST L=FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    R29FMT   - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
    R92FMT   - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 03/22/78 (PROGRAM 'SRTFAUD')

DATE(S) REVISED
    10/01/78 - EXPAND TO HANDLE ALL AUDIT FORMATS
             - NAME CHANGED TO 'AUDSORT' (OLD PROGRAM 'AUDSORT'
               DROPPED)
    12/08/78 - CORRECT PROBLEM WITH MULTIPLE ID'S, ONE OF WHICH
               HAS 0 PRUS
    08/18/80 - UPGRADE FOR CYBER 74
    10/21/80 - ADD EST DAILY CHARGE TO AI=I/P/F AUDITS
    10/28/80 - ADD EST MONTHLY CHARGE TO AI=I/P/F AUDITS
             - ADD # RBS AND UNUSED PRUS TO AI=I/P/F AUDITS
    01/02/81 - EXPAND TO HANDLE USER DEVICE SET AUDITS

LOCATION OF DECKS
    SOURCE
       UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
       EDITLIB USER LIBRARY: UTILITY

PROGRAM 'BANNER'

PURPOSE
   PRINT A BANNER (PAGE)

FUNCTIONAL CATEGORIES: J4

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
   THE BANNER PRINTED IS 10 LINES HIGH.   IT MAY BE PRINTED ON A
   NEW PAGE OR THE CURRENT PAGE, DEPENDING ON THE ABSENCE OR
   PRESENCE OF A THIRD PARAMETER IN THE EXECUTE CARD.
   ONLY 2 BANNERS WILL FIT ON A PAGE.

EXECUTION
   FROM BATCH
      ATTACH,UTILITY.
      LIBRARY,UTILITY.
      BANNER,ANY.   PRINT BANNER PAGE WITH WORD 'ANY

   FROM TTY
      BEGIN,UTILITY,,BANNER,ANY,OUT.
         ...   NORMALLY, MORE PROGRAMS WILL WRITE ON
                          'OUT'
      ROUTE,OUT,DC=PR,TID=<TID>.

   EXECUTE CARD PARAMETERS
      BANNER,NAME,OUTPUT,WHERE.
         NAME   - WORD TO BE PRINTED (1-7 CHARACTERS -
                   LETTERS AND NUMBERS ONLY)
                   THE FOLLOWING VALUES OF NAME HAVE SPECIAL
                   MEANING:
                      CPU   - THE CPU (6400/6600/6700/CY74)
                      DATE   - TODAY'S DATE (MMDDYY)
                      MF   - THE MAINFRAME (MFA/MFB/MFC/MFD)
                      TIME   - THE CURRENT TIME (HHMMSS)
         OUTPUT - LISTABLE OUTPUT
         WHERE   - OMITTED   - PRINT BANNER ON A NEW PAGE
                   NON-BLANK - PRINT BANNER ON SAME PAGE

   DEFAULT EXECUTE CARD
      BANNER,DUMMY,OUTPUT,NEWPAG.

   FL NEEDED TO LOAD: 24000B
   FL NEEDED TO RUN : 14000B

OUTPUT UNIT
   UNIT #   LFN   USE
   -------   -------   --
               OUTPUT   LISTABLE OUTPUT

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
        AND         DATE      SHIFT       TIME
   OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LEFTADJ - SQUEEZE LEFT AND REMOVE BLANKS AND OOB
        MFRAME  - GET MACHINE AND MAINFRAME

AUTHOR
   DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 06/20/74

DATE(S) REVISED
   06/19/75
   11/02/76 - ADD BANNER,CPU.....
   01/15/81 - RECOGNIZE 'MF' AS THE RUNNING MAINFRAME

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:    UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'BANNERS'

PURPOSE
    PRINT 1 TO 8 BANNERS ON ONE PAGE

LANGUAGE: FORTRAN IV EXTENDED

FUNCTIONAL CATEGORIES: J4

REMARKS
    PROGRAM 'BANNERS' SHOULD BE EXECUTED BY USING PUBLIC-ACCESS
    PROCEDURE 'BANNERS'. THIS DOCUMENT DESCRIBES ONLY THE
    PROGRAM 'BANNERS'.

    1, 2, 3, 5, AND 6 BANNERS PER PAGE ARE PRINTED AT 6 LPI.

    4, 7 AND 8 BANNERS PER PAGE ARE PRINTED AT 8 LINES/INCH WITH
    THE PRINTER RESTORED TO 6 LINES/INCH AT END-OF-JOB.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        BANNERS,INPUT,OUTPUT.
        . . .
        '   7/8/9   EOR
        <NBANR>,'B1',"B2","B3"."B4',"B5"."B6".'E7"."B8"
        '   7/8/9   EOR

          -OR-

        BEGIN,BANNERS,.....

    FROM INTERCOM
        BEGIN,UTILITY,,BANNERS.<BANNER-INPUT-FILE>,OUTPUT.
        . . .

          -OR-

        BEGIN.BANNERS.,....
        . . .

        ROUTE,OUTPUT,DC=PR,....

EXECUTE CARD PARAMETERS
    BANNERS,INPUT,OUTPUT,NBANR,B1,B2,B3.B4,B5,B6,B7,B8,
    CONSOL.   (MUST FIT ON ONE CARD)
        INPUT   - OPTIONAL INPUT FILE WITH BANNERS
                  (USE 0 TO INDICATE BANNERS ARE IN THE
                  EXECUTE STATEMENT)
        OUTPUT - LISTABLE OUTPUT
        NBANR   - NUMBER OF BANNERS TO PRINT (0-8)
                  (0 - PROGRAM WILL DETERMINE # OF BANNERS AND
                       WILL ADD DATE AND TIME BANNERS. IF
                       THERE IS ROOM)
        B1-B8   - UP TO 8 BANNERS (1-7 CHARACTERS EACH)
                  (WHEN THE PROCEDURE 'BANNERS' IS USED,
                  BANNERS ARE 1-10 CHARACTERS EACH.)
                  (WHEN DATA CARD(S) USED, BANNERS ARE 1-10
                  CHARACTERS EACH AND EIGHT (8) MUST BE
                  SUPPLIED, EVEN IF THEY ARE BLANK.)

                  THE FOLLOWING ARE RECOGNIZED FOR ANY BI:
                      CPU - MACHINE JOB IS RUNNING ON
                             (6700/6600/6400/CY74)
                      DATE - CURRENT DATE
                      MF   - MAINFRAME JOB IS RUNNING ON
                             (MFA/MFB/MFC/MFD)
                      TIME - CURRENT TIME
        CONSOL - TTY LIST OF BANNERS PRINTED
                  (0 - OMIT LIST)

    DEFAULT EXECUTE CARD
        BANNERS,INPUT,OUTPUT.
        -OR-
        BEGIN,BANNERS,,OUTPUT,NBANR=0.B1=CPU.B2=DATE.B3=TIME.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 36000B
    FL NEEDED TO RUN : 24000B

DATA CARD
    FREE-FORMAT (LIST-DIRECTED) WITH FIELDS SEPARATED BY COMMAS:

        FIELD   CONTENTS
        -----   --------
          1   NUMBER OF BANNERS (0-8)
          2   BANNER 1 (ENCLOSED IN QUOTES ("   "))
          3   BANNER 2 (ENCLOSED IN QUOTES ("   "))
          4   BANNER 3 (ENCLOSED IN QUOTES ("   "))
          5   BANNER 4 (ENCLOSED IN QUOTES ("   "))
          6   BANNER 5 (ENCLOSED IN QUOTES ("   "))
          7   BANNER 6 (ENCLOSED IN QUOTES ("   "))
          8   BANNER 7 (ENCLOSED IN QUOTES ("   "))
          9   BANNER 8 (ENCLOSED IN QUOTES ("   "))

    E.G.,   3."BANR1","BANR2","BANR3"." "," "," "," "," "

    NOTE: IF A SECOND CARD IS NEEDED. BREAK AFTER A COMMA.
          E.G.,   7,"BANR1","BANR2"."BANR3","BANR4",
                  "BANR5","BANR6","BANR7".' '

```
INPUT/OUTPUT UNITS
   UNIT  #     LFN                              USE
   -------    -------    --------------------------------------------
      3       CONSOL     LIST OF BANNERS AT TTY
                         (RETURNED AT END OF PROGRAM)
              INPUT      OPTIONAL INPUT FILE WITH BANNERS
              OUTPUT     LISTABLE OUTPUT

SUBROUTINE AND'FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      AND         CONNEC    DATE      MAX        MIN
      SHIFT       TIME
   OTHERS
      BANR     - WRITE A 20-LINE BANNER
      BANR6    - WRITE A 10-LINE BANNER
      IFMTV    - FAST VARIABLE I-FORMAT DECODE
      MFRAME   - GET THIS CPU AND MAINFRAME
      MOVEIT   - MOVE AN ARRAY
      UNLOAD   - RETURN.CONSOL

AUTHORS
   DAVID V SOMMER - DTNSRDC CODE 1892.2 - ORIGINAL 3-BANNER
                                          PROGRAM
   GARY L STUMP   - DTNSRDC CODE 2731   - 8-BANNER PROGRAM
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN:  03/22/78 - GLS

DATE(S) REVISED
   06/23/78 - DVS - ADD BANNERS TO EXECUTE CARD
   01/15/81 - DVS - ADD 'MF' AND CY74 RECOGNITION

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:    UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'BANNER3'

PURPOSE
    PRINT 3 BANNERS ON ONE PAGE

FUNCTIONAL CATEGORIES: J4

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NONE

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,BANNER3,OUTPUT,<PARAMS>.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        BANNER3.OUT,<PARAMS>.
           (USUALLY MORE OUTPUT IS WRITTEN ONTO OUT)
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        BANNER3,OUTPUT,BANR1,BANR2,BANR3.
            OUTPUT - LISTABLE OUTPUT
            BANR1   - FIRST BANNER (1-7 CHARACTERS)
            BANR2   - SECOND BANNER (1-7 CHARACTERS)
            BANR3   - THIRD BANNER (1-7 CHARACTERS)
        THE FOLLOWING ARE RECOGNIZED FOR ANY BANR-N:
            CPU - BANNER IS MACHINE JOB IS RUNNING ON
                   (6700/6600/6400/CY74)
            DATE - BANNER IS CURRENT DATE
            MF   - BANNER IS MAINFRAME JOB IS RUNNING ON
                   (MFA/MFB/MFC/MFD)
            TIME - BANNER IS CURRENT TIME

    DEFAULT EXECUTE CARD
        BANNER3,OUTPUT,CPU,DATE,TIME.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 16000B

OUTPUT UNIT
    UNIT #   LFN   USE   .
    -------   -------   --
               OUTPUT   LISTABLE OUTPUT

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND         DATE        TIME
    OTHERS
        BANR     - WRITE A BANNER
        GETLFNS  - GET ACTUAL LOCAL FILE NAMES
        MFRAME   - GET THIS CPU AND MAINFRAME

ARITHMETIC STATEMENT FUNCTIONS
    L82FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/11/77

DATE(S) REVISED
    02/10/78 - 'TIME' CORRECTED
    01/15/81 - ADD 'MF' AND CY74 RECOGNITION

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:   UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:   UTILITY
```

PROGRAM 'BANNER6'

PURPOSE
    PRINT 3-6 BANNERS ON ONE PAGE

FUNCTIONAL CATEGORIES: J4

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NONE

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,BANNER6,OUTPUT,<PARAMS>.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        BANNER6,OUT,<PARAMS>.
          (USUALLY MORE OUTPUT IS WRITTEN ONTO OUT)
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        BANNER6,OUTPUT,BANR1,BANR2,BANR3,BANR4,BANR5,BANR6.
            OUTPUT - LISTABLE OUTPUT
            BANR1   - FIRST BANNER (1-7 CHARACTERS)
            BANR2   - SECOND BANNER (1-7 CHARACTERS)
            BANR3   - THIRD BANNER (1-7 CHARACTERS)
            BANR4   - FOURTH BANNER (1-7 CHARACTERS)
                      (IF OMITTED OR 'DUMMY4', A BLANK BANNER IS
                      WRITTEN)
            BANR5   - FIFTH BANNER (1-7 CHARACTERS)
                      (IF OMITTED OR 'DUMMY5', A BLANK BANNER IS
                      WRITTEN)
            BANR6   - SIXTH BANNER (1-7 CHARACTERS)
                      (IF OMITTED OR 'DUMMY6', A BLANK BANNER IS
                      WRITTEN)
        THE FOLLOWING ARE RECOGNIZED FOR ANY BANR-N:
            CPU - BANNER IS MACHINE JOB IS RUNNING ON
                   (6700/6600/6400/CY74)
            DATE - BANNER IS CURRENT DATE
            MF   - BANNER IS MAINFRAME JOB IS RUNNING ON
                   (MFA/MFB/MFC/MFD)
            TIME - BANNER IS CURRENT TIME

    DEFAULT EXECUTE CARD
        BANNER6,OUTPUT,CPU,DATE,TIME.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 15000B

OUTPUT UNIT
    UNIT #   LFN   USE
    -------   -------   --------------------------------------
               OUTPUT   LISTABLE OUTPUT

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   DATE   TIME
    OTHERS
        BANR6   - WRITE A BANNER (6 LINES HIGH)
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        MFRAME   - GET THIS CPU AND MAINFRAME

ARITHMETIC STATEMENT FUNCTIONS
    L82FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 10/18/77

DATE(S) REVISED
    01/15/81 - ADD 'MF' AND CY74 RECOGNITION

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'BINDEX'

PURPOSE
    GIVE LIST AND SORTED LIST OF OUTPUT OF EDITLIB 'LISTLIB'
    AND 'CONTENT' DIRECTIVES

FUNCTIONAL CATEGORIES: Q7

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    'CONTENT' AND 'LISTLIB' DIRECTIVES SHOULD NOT BE MIXED IN
    THE SAME EDITLIB. MULTIPLE 'LISTLIB' DIRECTIVES
    MAY BE USED IN ONE EDITLIB. ONLY ONE 'CONTENT' DIRECTIVE
    SHOULD BE USED IN AN EDITLIB.

EXECUTION
    FROM BATCH
        ATTACH,LFN,.....   (FILE/LIBRARY TO BE 'BINDEXED')
        EDITLIB,L=TAPE1.
        BEGIN,UTILITY,,BINDEX.
        '   7/8/9   EOR
          (EDITLIB LISTLIB OR CONTENT DIRECTIVES)
        ENDRUN.
        "   6/7/8/9   EOI

    FROM TTY
        ATTACH,LFN,.....   (FILE/LIBRARY TO BE 'BINDEXED')
        CONNECT,INPUT
        EDITLIB,L=TAPE1.
          (ENTER EDITLIB LISTLIB OR CONTENT DIRECTIVES)
        ENDRUN.
        (PERCENT) EOF
        BEGIN,UTILITY,,BINDEX,,OUT.
        ROUTE,OUT,DC=PR,.....

    EXECUTE CARD PARAMETERS
        BINDEX,TAPE1,OUTPUT,FILENAME,SIZE,LEFT,SORT.
            TAPE1   - INPUT FILE
                         (OUTPUT OF EDITLIB)
            OUTPUT   - LISTABLE OUTPUT
            FILENAME   - FILE NAME FOR HEADING
                         USED WHEN TAPE1 IS OUTPUT OF 'CONTENT'
                         DIRECTIVE. IS MISSING, 'BINARY FILE' IS
                         USED.
            SIZE   - ESTIMATED NUMBER OF FILES LISTED ON
                         TAPE1. RANGE IS 20-2000.
                         DEFAULT: 20.
            LEFT   - PRINT CENTERING
                         LEFT OR MISSING - PRINT LEFT-ADJUSTED ON
                                           PAGE
                         OTHER   - PRINT IN CENTER OF PAGE
            SORT   - IF OMITTED OR 'SORT' - PRINT SORTED LIST(S)
                         IF ANYTHING ELSE - PRINT FIRST LIST ONLY

    DEFAULT EXECUTE CARD
        BINDEX,TAPE1,OUTPUT,'BINARY FILE'.20,LEFT,SORT.

```
FL NEEDED TO LOAD: 31000B
FL NEEDED TO RUN : 21000B (MINIMUM)
   (PROGRAM GETS CORE AS IT IS NEEDED)

INPUT/OUTPUT UNITS
   UNIT #      LFN                          USE
   -------    -------    --------------------------------------------
              OUTPUT     LISTABLE OUTPUT
      1       TAPE1      INPUT FILE (OUTPUT OF EDITLIB 'LISTLIB'
                        OR 'CONTENT' DIRECTIVE)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      AND        EOF        MAXO       MINO       MOD
      MOVLEV     OR         RECOVR     REMARK     SHIFT
   PART OF PROGRAM
      EOJ     - ABNORMAL TERMINATION ROUTINE
      PRINTIT - PRINT ORIGINAL LISTING
      SORTIT  - SORT AND PRINT ADDITIONAL LISTINGS
   OTHERS
      ASORTMV - SORT 2 DIMENSIONAL ARRAY
      FTNRFL  - GET CURRENT FL
      GETLFNS - GET ACTUAL LOCAL FILE NAMES
      IFMTV   - FAST VARIABLE I-FORMAT DECODE
      ISITCNF - TEST FOR CONNECTED FILE
      REDUCE  - GET CORE AS REQUIRED
      REPLAC  - REPLACE ONE CHARACTER BY ANOTHER

ARITHMETIC STATEMENT FUNCTIONS
   FAST A-FORMAT DECODES
      A22FMT     A55FMT     A62FMT     A63FMT
   FAST L-FORMAT DECODES (LEFT-ADJ, ZERO-FILLED)
      L43FMT     L45FMT     L71FMT     L76FMT

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 02/06/75

DATE(S) REVISED
   03/03/75
   11/03/75
   04/08/75
   10/22/76 - BYPASS PAGE HEADINGS WHEN ENTRY POINTS ARE ON TWO
              PAGES.  ADD THE PAGE NUMBER FROM THE EDITLIB
              LISTING TO THE FIRST LIST IN COLUMNS 118-120.  IF
              THE OUTPUT FILE IS CONNECTED TO A TELETYPE AND
              LEFT JUSTIFICATION IS REQUESTED, COLUMNS 70-72
              ARE USED.
   02/15/78 - ADD SUPPORT FOR PROCEDURES

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:   UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:   UTILITY
```

PROGRAM 'CALCIBL'

PURPOSE
    CALCULATE BEST BLOCK LENGTHS (I.E. - MIN TIME REQUIRED FOR
    RANDOM ACCESS AND MINIMUM BUFFER SIZE) FOR INDEX SEQUENTIAL
    FILE

FUNCTIONAL CATEGORIES: Q0

LANGUAGE: FORTRAN IV

REMARKS
    THIS PROGRAM ASKS THE USER FOR INPUT VALUES, THEN CALLS THE
    IBL FUNCTION TO PERFORM THE CALCULATION OF BEST BLOCK SIZES.
    REFER TO WRITE-UP OF IBL IN CCLIB/N FOR DISCUSSION OF
    ASSUMPTIONS USED IN DERIVING FORMULA FOR BEST BLOCK LENGTH.

EXECUTION

    FROM TTY
        SCREEN,80
        CONNECT,INPUT,OUTPUT
        BEGIN,UTILITY,,CALCIBL

        PROGRAM WILL PROMPT USER FOR INPUT. WILL ASK FOR ONE
        LINE OF DATA VALUES OF THE FORM:
            FLM,RL,KL,IP,DP,MRL
        WHERE   FLM IS THE NUMBER OF RECORDS THE FILE IS TO
                        CONTAIN (1 TO 7 DIGITS)
                    RL IS THE AVERAGE LENGTH OF A RECORD IN
                        CHARACTERS (1 TO 3 DIGITS)
                    KL IS THE KEY LENGTH IN CHARACTERS
                        (1 OR 2 DIGITS)
                    IP IS THE INDEX PADDING PERCENT
                        (1 OR 2 DIGITS)
                    DP IS THE DATA PADDING PERCENT
                        (1 OR 2 DIGITS)
                    MRL IS THE MAXIMUM RECORD LENGTH IN
                        CHARACTERS (1 TO 3 DIGITS)

        IF ZERO OR NULL VALUE IS GIVEN FOR A PARAMETER, THE
        FOLLOWING DEFAULT VALUES ARE USED:
                FLM - 100000
                RL - MRL
                KL - 15
                IP - 5
                DP - 0
                MRL - 70

        OUTPUT FORMAT
            THE OUTPUT FROM CALCIBL IS A SHORT REPORT GIVING BEST
            BLOCK LENGTH FOR ONE LEVEL INDEX AND TWO LEVEL INDEX.
            IBL LENGTH IS GIVEN IN BOTH CHARACTERS AND PRUS. THE
            BUFFER SIZE REQUIRED IS GIVEN IN WORDS. RELATIVE

TIMES PER RECORD ARE GIVEN FOR RANDOM AND SEQUENTIAL
ACCESS. BLOCKING FACTORS FOR INDEX AND DATA BLOCKS
ARE GIVEN. MAXIMUM AND PADDED FILE SIZES (QUOTED IN
NUMBER OF RECORDS) ARE GIVEN. FINALLY INPUT PARAMETER
VALUES ARE PRINTED.

THE RESULTS CAN BE USED TO SELECT BLOCK LENGTHS
FOR INDEX AND DATA BLOCKS. FOR INSTANCE, AFTER
DECIDING ON WHETHER A 1 OR 2 LEVEL FILE IS BEST
THE SIZES CAN BE SET IN COBOL VIA THE STATEMENTS
      INDEX-BLOCK CONTAINS ___ CHARACTERS
      DATA-BLOCK CONTAINS ___ CHARACTERS
IN THE SELECT CLAUSE FOR THE FILE.

   FL NEEDED TO LOAD: 30000B
   FL NEEDED TO RUN : 17000B

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      NONE
   PART OF PROGRAM
      IBL - PERFORM BEST BLOCK CALC AND PRINT REPORT
   OTHERS
      NONE

AUTHOR
   BRUCE D. BLACK - DTNSRDC CODE 1892.1

DATE WRITTEN: 04/03/78

DATE(S) REVISED

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY: UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY: UTILITY

PROGRAM 'CARDS'

PURPOSE
    REPRODUCE A BCD DECK WITH MODIFICATONS. (FIELDS MAY BE
    MOVED, DELETED. INTERCHANGED, GANG PUNCHED AND/OR SEQUENCED)

FUNCTIONAL CATEGORIES: 01

REMARKS
    1) UP TO 5 FIELDS MAY BE INTERCHANGED
    2) UP TO 10 FIELDS MAY BE MOVED AND REPLACED BY BLANKS
    3) UP TO 5 FIELDS MAY BE DELETED
    4) GANG PUNCHING OF UP TO 65 COLUMNS MAY BE INSERTED
       IN A FIXED FIELD
    5) SEQUENCING MAY BE PERFORMED IN A FIELD OF UP TO
       10 COLUMNS
    6) OPTIONS MAY BE SPECIFIED IN ANY ORDER, BUT ARE PROCESSED
       AS FOLLOWS:
            A) ALL SWAPS, IN THE ORDER READ
            B) ALL MOVES, IN THE ORDER READ
            C) ALL DELETES, IN THE ORDER READ
            D) ALL GANGPUNCHING, IN THE ORDER READ
            E) SEQUENCING IS PUT IN

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        DATE   EOF
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES

ARITHMETIC STATEMENT FUNCTIONS
    NONE

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS

FORTRAN LOGICAL UNIT	LOCAL FILE NAME	USE
5	INPUT	INPUT FILE CONTAINING FIELD CONTROL CARDS AND THE DECK TO BE REPRODUCED
	OUTPUT	LISTABLE OUTPUT
	PUNCH	PUNCHED OUTPUT

```
EXECUTION
   FROM BATCH
      ATTACH,UTILITY.
      LDSET,LIB=UTILITY.
      CARDS.
      '    7/8/9      EOR
            (FIELD CONTROL CARDS)
            (BLANK CARD   OR   7/8/9)
            (DECK TO BE REPRODUCED)
      "    6/7/8/9    EOF

   FROM TTY
      ATTACH,IN,....          (FIELD CONTROL CARDS AND DECK)
      ATTACH,UTILITY.
      LIBRARY,UTILITY.
      CARDS,IN,OUT.
      ROUTE,OUT,DC=PR,TID=....
      ROUTE,PUNCH,DC=PU,TID=....

   EXECUTE CARD PARAMETERS
      CARDS,INFILE,OUTPUT,PUNCH,LIST.
            INFILE  - INPUT FILE CONTAINING FIELD CONTROL
                      CARDS AND THE DECK TO BE REPRODUCED
            OUTPUT  - LISTABLE OUTPUT
            PUNCH   - PUNCHED OUTPUT
            LIST    - PRINT OPTION
                      OMITTED OR 'LIST' - LIST CARDS
                      ANYTHING ELSE      - DO NOT LIST CARDS

   DEFAULT EXECUTE CARD
      CARDS,INPUT,OUTPUT,PUNCH,LIST.

   FL NEEDED TO LOAD: 26000B

DATA CARDS
   ONE OR MORE FIELD CONTROL CARDS FOLLOWED BY A BLANK CARD
   (OR 7/8/9 END-OF-RECORD) FOLLOWED BY THE DECK TO BE
   REPRODUCED.

   FIELD CONTROL CARDS
        COL     CONTENTS
        -----   --------
         1      TYPE OF MODIFICATION
                D - DELETE
                E - ENDPUNCH (SEQUENCE)
                G - GANG PUNCH
                M - MOVE
                S - SWAP (INTERCHANGE)
        2-3     BLANK
        4-15    UP TO FOUR (4) 3-COLUMN INTEGER PARAMETERS
                (I1 I2 I3 I4)
        16-80   ALPHAMERIC TEXT FIELD, LEFT-JUSTIFIED
                ('G' TYPE ONLY)
```

MODIFICATION TYPES

D	I1 I2		DELETE COLUMNS I1 THRU I2 AND REPLACE WITH BLANKS
E	I1 I2 I3 I4		PUT SEQUENTIAL NUMBERS INTO COLUMNS I1 THRU I2, RIGHT-JUSTIFIED, ZERO-FILLED, BEGINNING WITH I3, INCREMENTING BY I4 (DEFAULT: E 77 80 10 10)
G	I1 I2	TEXT...	REPLACE COLUMNS I1 THRU I2 WITH THE SPECIFIED TEXT FIELD (DEFAULT: G 73 76)
M	I1 I2 I3 I4		MOVE FIELD IN COLUMNS I1 THRU I2 TO FIELD IN COLUMNS I3 THRU I4 AND BLANK THE FORMER FIELD (I4 MAY BE OMITTED)
S	I1 I2 I3 I4		SWAP FIELD IN COLUMNS I1 THRU I2 WITH FIELD IN COLUMNS I3 THRU I4. (I4 MAY BE OMITTED)

AUTHORS
    SHARON E GOOD - NSRDC CODE 1892.1
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 12/72

DATE(S) REVISED
    07/16/75

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'CARDS2'

PURPOSE
   REPRODUCE A BCD DECK WITH MODIFICATIONS. (FIELDS MAY BE
   COPIED, MOVED, DELETED, INTERCHANGED, GANG PUNCHED AND/OR
   SEQUENCED.)

FUNCTIONAL CATEGORIES: 01

REMARKS
   1) UP TO 10 FIELDS MAY BE COPIED
   2) UP TO 10 FIELDS MAY BE INTERCHANGED
   3) UP TO 10 FIELDS MAY BE MOVED AND REPLACED BY BLANKS
   4) UP TO 10 FIELDS MAY BE DELETED
   5) GANG PUNCHING OF UP TO 65 COLUMNS MAY BE INSERTED
      IN A FIXED FIELD
   6) SEQUENCING MAY BE PERFORMED IN A FIELD OF UP TO
      10 COLUMNS
   7) OPTIONS ARE PERFORMED IN THE FOLLOWING ORDER:
      A) ALL COPIES, IN THE ORDER READ
      B) ALL DELETES, IN THE ORDER READ
      C) SEQUENCING
      D) ALL GANGPUNCHING, IN THE ORDER READ
      E) ALL MOVES, IN THE ORDER READ
      F) ALL SWAPS, IN THE ORDER READ

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      CLOSEM   DATE   FILESQ   GET   IFETCH
      MOVLEV   OPENM   RECOVR   SHIFT   TIME
   OTHERS
      EOJ   - ABNORMAL TERMINATION ROUTINE
      GETLFNS - GET ACTUAL LOCAL FILE NAMES
      IFMT10   - FAST I10-FORMAT ENCODE
      IOPEN   - TEST FOR RM FILE OPEN
      REDUCE   - REDUCE CORE TO MINIMUM NEEDED TO RUN
      REPLAC   - REPLACE ONE CHARACTER BY ANOTHER
      VALID   - VALIDATE FIELD CONTROL CARDS
      VFILL   - FILL ARRAY WITH WORD

ARITHMETIC STATEMENT FUNCTIONS
   FAST I-FORMAT DECODES
      I33FMT   I34FMT   I37FMT   I310FMT
   FAST L-FORMAT DECODES (LEFT-ADJ, ZERO-FILLED)
      L1FMT   L11FMT

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS

FORTRAN LOGICAL UNIT	LOCAL FILE NAME	USE
	DEK	DECK TO BE REPRODUCED
	FCC	FIELD CONTROL CARDS
	OUTPUT	LISTABLE OUTPUT
	PUNCH	PUNCHED OUTPUT

```
EXECUTION
   FROM BATCH
      ATTACH,UTILITY.
      LDSET,LIB=UTILITY.
      CARDS2,INPUT,INPUT.
      '   7/8/9     EOR
         (FIELD CONTROL CARDS)
         (BLANK CARD OR 7/8/9)
         (DECK TO BE REPRODUCED)
      "   6/7/8/9   EOF

   FROM TTY
      ATTACH,FCC,....        (FIELD CONTROL CARDS)
      ATTACH,DEK,....        (DECK TO BE REPRODUCED)
      ATTACH,UTILITY.
      LIBRARY,UTILITY.
      CARDS2,,,OUT.
      ROUTE,OUT,DC=PR,TID=....
      ROUTE,PUNCH,DC=PU,TID=....

   EXECUTE CARD PARAMETERS
      CARDS2,FCC,DEK,OUTPUT,PUNCH,OPTION.
         FCC     - INPUT FILE OF FIELD CONTROL CARDS
         DEK     - INPUT FILE OF DECK TO BE REPRODUCED
                   (MAY BE SAME AS FCC)
         OUTPUT  - LISTABLE OUTPUT
         PUNCH   - PUNCHED OUTPUT
         OPTION  - OUTPUT OPTION
                   OMITTED OR 'ALL' - LIST AND PUNCH
                   'LIST'           - LIST ONLY
                   'PUNCH'          - PUNCH ONLY
                   ANYTHING ELSE    - NO LIST OR PUNCH
                                      (FIELD CARDS CHECKED)

   DEFAULT EXECUTE CARD
      CARDS2,FCC,DEK,OUTPUT,PUNCH,ALL.

   FL NEEDED TO LOAD: 32000B
      (PROGRAM REDUCES TO MINIMUM NEEDED TO RUN)
```

DATA CARDS
    ONE OR MORE FIELD CONTROL CARDS FOLLOWED BY A BLANK CARD
    (OR 7/8/9 END-OF-RECORD). DECK TO BE REPRODUCED MAY
    FOLLOW OR BE IN A SEPARATE FILE.

    FIELD CONTROL CARDS
        COL   CONTENTS
        ----- --------
         1   TYPE OF MODIFICATION
                C - COPY
                D - DELETE
                E - ENDPUNCH (SEQUENCE)
                G - GANG PUNCH
                M - MOVE AND BLANK FORMER FIELD
                S - SWAP (INTERCHANGE)
        2-3   BLANK
        4-15   UP TO FOUR (4) 3-COLUMN INTEGER PARAMETERS
               (I1 I2 I3 I4)
        16-80 ALPHAMERIC TEXT FIELD, LEFT-JUSTIFIED

    MODIFICATION TYPES
        C   I1 I2 I3   COPY FIELD IN COLUMNS I1 THRU I2
                                INTO FIELD STARTING AT I3. RETAIN
                                THE FORMER FIELD.
        D   I1 I2   DELETE COLUMNS I1 THRU I2 AND
                                REPLACE WITH BLANKS.
        E   I1 I2 I3 I4   PUT SEQUENTIAL NUMBERS INTO
                                COLUMNS I1 THRU I2, RIGHT-
                                JUSTIFIED, ZERO-FILLED, BEGINNING
                                WITH I3, INCREMENTING BY I4.
        G   I1 I2   TEXT... REPLACE COLUMNS I1 THRU I2 WITH
                                THE SPECIFIED TEXT FIELD.
                                (DEFAULT: G   73 76)
        M   I1 I2 I3   MOVE FIELD IN COLUMNS I1 THRU I2
                                TO FIELD STARTING IN I3. BLANK
                                THE FORMER FIELD.
        S   I1 I2 I3   SWAP FIELD IN COLUMNS I1 THRU I2
                                WITH FIELD STARTING IN I3.

    NOTE: IN ALL CASES, I2 MAY NOT BE LESS THAN I1.

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2
                     (BASED ON PROGRAM 'CARDS' BY SHARON E GOOD)

DATE WRITTEN: 07/21/75

DATE(S) REVISED
    11/10/75
    10/04/76 - CORRECT D/G OPTIONS REQUIRING I3 FIELD

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'CBLFMT'

PURPOSE
    REFORMAT A COBOL SOURCE PROGRAM TO ENHANCE ITS READABILITY,
    THEREBY MAKING IT EASIER TO UNDERSTAND AND MODIFY

FUNCTIONAL CATEGORIES: QO

LANGUAGE: COBOL5

REMARKS
    A TOOL OF THIS TYPE CAN BE VERY USEFUL IN BOTH MAINTENANCE
    AND DEVELOPMENT ACTIVITIES.

    THE MODIFICATION OF AN EXISTING PROGRAM IS FREQUENTLY
    PERFORMED BY SOMEONE OTHER THAN THE PROGRAM'S AUTHOR,
    AND THE ABILITY TO GRASP THE PROGRAM'S LOGIC QUICKLY IS
    ESSENTIAL. IN THESE CASES, REFORMATTING THE SOURCE CAN
    COMPENSATE FOR A LACK OF CLARITY IN THE ORIGINAL CODING
    AND CAN GREATLY AID COMPREHENSION.

    WHEN A PROGRAM IS BEING DEVELOPED, ESPECIALLY WHEN
    "STRUCTURED" CODING TECHNIQUES ARE USED. A FORMATTING
    TOOL CAN SAVE A CONSIDERABLE AMOUNT OF TIME. MODIFICATION
    OF A NESTED CONDITIONAL STRUCTURE FREQUENTLY REQUIRES
    RECODING STATEMENTS FOLLOWING THE CHANGE JUST TO
    MAINTAIN PROPER RELATIVE INDENTATION. CBLFMT HANDLES
    THIS PROBLEM AUTOMATICALLY.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,PROGIN,....
        REQUEST,PROGOUT,*PF.
        CBLFMT.   EXECUTE REFORMAT PROGRAM
        CATALOG,PROGOUT,....   SAVE REFORMATTED PROGRAM
        REWIND,PROGOUT.
        COBOL5,I=PROGOUT,....   CALL COBOL COMPILER

```
FROM TTY
    DISCONT,OUTPUT.           DISCONNECT OUTPUT FILE
    ATTACH,UTILITY.
    LIBRARY,UTILITY.
    ATTACH,PROGIN,....
    REQUEST,PROGOUT,*PF.
    CBLFMT.
    CATALOG,PROGOUT,....
    REWIND,PROGOUT.
    COBOL5,I=PROGOUT,....
    ROUTE,OUTPUT,DC=PR,TID=....         PRINT OUTPUT

DEFAULT EXECUTE CARD
    CBLFMT.

FL NEEDED TO LOAD: 35600B
FL NEEDED TO RUN : 75000B
```

INPUT UNITS

LFN	USE
PROGIN	SOURCE PROGRAM TO BE REFORMATTED (DISK ASSUMED).

OUTPUT UNITS

LFN	USE
PROGOUT	REFORMATTED SOURCE PROGRAM (DISK ASSUMED). SUITABLE FOR PROCESSING BY COBOL COMPILER.
OUTPUT	LISTING OF OLD SOURCE PROGRAM, REFORMATTED PROGRAM AND ERROR MESSAGES (PRINTER ASSUMED).

METHOD

FORMATTING FUNCTIONS
1. PLACE EACH SECTION HEADER AND PROCEDURE NAME ON A SEPARATE LINE.
2. HIGHLIGHT EACH PARAGRAPH AND SECTION NAME BY PRECEDING IT WITH A BLANK COMMENT LINE (* IN COLUMN 7).
3. BEGIN EACH NEW PROCEDURE DIVISION STATEMENT ON A NEW LINE.
4. BEGIN EACH PROCEDURE DIVISION SENTENCE IN COLUMN 12 OF A NEW LINE.
5. INDENT CONTINUATION LINES OF A PROCEDURE DIVISION SENTENCE.
6. INDENT EACH SUCCEEDING "IF" STATEMENT IN A NESTED CONDITIONAL STRUCTURE.
7. ALIGN EACH "ELSE" STATEMENT WITH ITS CORRESPONDING "IF"; HIGHLIGHT THE "ELSE" BY PLACING IT ON A LINE BY ITSELF.
8. ALIGN "AND" AND "OR" LOGICAL CONNECTORS WITH THEIR ASSOCIATED "IF" IN ORDER TO CLARIFY THE CONDITIONS TO BE TESTED.
9. INDENT ALL IMPERATIVE STATEMENTS WITHIN AN "IF" CONDITIONAL STATEMENT AND BLOCK THEM ACCORDING TO THEIR NESTING LEVEL.
10. ASSIGN SEQUENCE NUMBERS TO THE REFORMATTED SOURCE PROGRAM IN COLUMNS 1-6.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
PART OF LANGUAGE
NONE
OTHERS
NONE

AUTHOR
CHARLES L. ORR

DATE WRITTEN: 1/31/80

DATE(S) REVISED

LOCATION OF DECKS
SOURCE
UPDATE LIBRARY: UTILITYPL,ID=CSYS
OBJECT
EDITLIB USER LIBRARY: UTILITY

PROGRAM 'COMPAR'

PURPOSE
COMPARE TWO TEXT FILES AND REPORT ANY DIFFERENCES

FUNCTIONAL CATEGORIES: MO

LANGUAGE: PASCAL

COMPUTER
CDC 6000

REMARKS
THE COMPAR DOCUMENT IS FROM THE UNIVERSITY OF MINNESOTA.
ONLY A FEW MODIFICATIONS HAVE BEEN MADE TO THE DOCUMENT
REFERENCES TO KRONOS/NOS SHOULD BE IGNORED.

NOTE THAT THE NAME HAS BEEN CHANGED TO 'COMPAR' TO AVOID
CONFUSION WITH THE NOS/BE CONTROL CARD 'COMPARE'.

EXECUTION
FROM BATCH AND TTY
ATTACH,FILEA.....   (FIRST FILE TO BE COMPARED)
ATTACH,FILEB.....   (SECOND FILE TO BE COMPARED)
ATTACH,UTILITY.
LDSET,LIB=UTILITY.   -OR-   LIBRARY,UTILITY.
COMPAR,FILEA,FILEB,....

EXECUTE CARD PARAMETERS
COMPAR,FILEA,FILEB,OUTPUT,MODFILE/<OPTIONS>.
FILEA   - FIRST FILE TO BE COMPARED
FILEB   - SECOND FILE TO BE COMPARED
OUTPUT - LISTABLE OUTPUT
MODFILE - FILE OF UPDATE/MODIFY DIRECTIVES TO CONVERT
FILEA TO FILEB
OPTIONS - CONTROL FOR THE COMPARISON

DEFAULT EXECUTE CARD
COMPAR,FILEA,FILEB,OUTPUT,MODS/C6,D,W120.

FL NEEDED TO LOAD: 6000B
FL NEEDED TO RUN : 25000B
(PROGRAM ADJUSTS CORE AS REQUIRED)

LOCATION OF DECKS
SOURCE
UPDATE LIBRARY: PTOOLSPL,ID=CSYS,TK=*---*
OBJECT
EDITLIB LIBRARY: UTILITY

COMPAR - COMPARE TWO TEXTFILES AND REPORT THEIR DIFFERENCES

JAMES F. MINER
SOCIAL SCIENCE RESEARCH FACILITIES CENTER
ANDY MICKEL
UNIVERSITY COMPUTER CENTER
UNIVERSITY OF MINNESOTA
MINNEAPOLIS, MN 55455 USA

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WHAT COMPAR DOES

COMPAR IS USED TO DISPLAY THE DIFFERENCES BETWEEN TWO SIMILAR
TEXTS (REFERRED TO AS "FILEA" AND "FILEB"). SUCH TEXTFILES COULD BE
PASCAL SOURCE PROGRAMS, CHARACTER DATA, DOCUMENTATION, ETC.

COMPAR IS LINE-ORIENTED MEANING THE SMALLEST UNIT OF COMPARISON
IS THE TEXT LINE (IGNORING TRAILING BLANKS). COMPAR GENERATES A
REPORT OF DIFFERENCES (MISMATCHES OR EXTRA TEXT) BETWEEN THE TWO
TEXTFILES. THE CRITERION FOR DETERMINING THE LOCALITY OF DIFFERENCES
IS THE NUMBER OF CONSECUTIVE LINES ON EACH FILE WHICH MUST MATCH AFTER
A PRIOR MISMATCH, AND CAN BE SELECTED AS A PARAMETER.

BY SELECTING OTHER PARAMETERS, YOU CAN DIRECT COMPAR TO RESTRICT
THE COMPARISON TO VARIOUS LINEWIDTHS, MARK COLUMN-WISE THE DIFFERENCES
IN PAIRS OF MISMATCHED LINES, GENERATE TEXT-EDITOR DIRECTIVES TO BE
USED TO CONVERT FILEA INTO FILEB, OR GENERATE A LISTING WHICH WILL
FLAG LINES ON FILEB INDICATING THEIR ADDITION OR DELETION AS A RESULT
OF THE APPLICATION OF THE EDITOR DIRECTIVES.

HOW TO USE COMPAR

COMPAR IS AVAILABLE AS AN OPERATING SYSTEM CONTROL STATEMENT ON
CDC 6000/CYBER 70,170 COMPUTER SYSTEMS. THE GENERAL FORM OF THE
CONTROL STATEMENT IS:

COMPAR (A,B.LIST,MODFILE/OPTIONS)

COMPAR. MEANS
COMPAR (FILEA,FILEB,OUTPUT.MODS/C6,D,W120)

"FILEA" AND "FILEB" ARE THE NAMES OF THE TWO TEXTFILES BEING
COMPARED, 'OUTPUT" IS THE REPORT FILE, AND "MODS" IS THE FILE NAME FOR
THE GENERATION OF TEXT-EDITOR DIRECTIVES IF THE "M" OPTION IS
SELECTED--SEE BELOW. THE VARIOUS OPTIONS ARE: C, D, F, M, P, AND W.

CN   MATCH CRITERION (1 <= N <= 100).
        C DETERMINES THE NUMBER OF CONSECUTIVE LINES ON EACH FILE
        WHICH MUST MATCH IN ORDER THAT THEY BE CONSIDERED AS
        TERMINATING A PRIOR MISMATCH. C THEREFORE AFFECTS COMPAR'S
        "SENSITIVITY" TO THE "LOCALITY" OF DIFFERENCES. SETTING C TO
        A LARGE VALUE TENDS TO PRODUCE FEWER (BUT LONGER) MISMATCHES
        THAN DOES A SMALL VALUE. C6 APPEARS TO GIVE GOOD RESULTS ON
        PASCAL SOURCE FILES, BUT MAY BE INAPPROPRIATE FOR OTHER
        APPLICATIONS.
        DEFAULT: C6.

D   REPORT DIFFERENCES.
        D DIRECTS COMPAR TO DISPLAY MISMATCHES AND EXTRA TEXT
        BETWEEN FILEA AND FILEB IN A CLEARLY ANNOTATED REPORT. ONLY
        ONE OF D, F, OR M CAN BE EXPLICITLY SELECTED AT ONE TIME.
        DEFAULT: SELECTED.

F   SELECT FLAG-FORM OUTPUT.
        F DIRECTS COMPAR TO LIST FILEB ANNOTATED WITH LINES PREFIXED
        BY AN "A" OR "D" INDICATING "ADDITIONS" OR "DELETIONS"
        RESPECTIVELY. SUCH MODIFICATIONS COULD HAVE BEEN GENERATED
        WITH THE M OPTION. ONLY ONE OF D, F, OR M CAN BE EXPLICITLY
        SELECTED AT ONE TIME.
        DEFAULT: NOT SELECTED.

M   PRODUCE MODS FILE.
        M DIRECTS COMPAR TO PRODUCE A FILE OF "INSERT" OR "DELETE"
        DIRECTIVES READY FOR THE CDC MODIFY OR UPDATE TEXT EDITORS
        (AN 'IDENT" DIRECTIVE MUST BE ADDED). THE INSERTIONS AND
        DELETIONS WILL CONVERT FILEA INTO FILEB. FILEA AND FILEB
        SHOULD BE FILES WITH SEQUENCING APPEARING IN COLUMNS BEYOND
        THE LINEWIDTH SPECIFIED BY THE W OPTION. THIS IS TRUE OF
        MODIFY AND UPDATE "COMPILE" FILES (W72 IS RECOMMENDED).
        SEQUENCE NUMBERS ARE OF THE FORM:

            <BLANKS> IDENTNAME <BLANKS> UNSIGNEDINTEGER.

        ONLY ONE OF D, F, OR M CAN BE EXPLICITLY SELECTED AT ONE
        TIME.
        DEFAULT: NOT SELECTED.

P   MARK PAIRS OF MISMATCHED LINES.
        P ALTERS THE ACTION OF THE D DIRECTIVE BY MARKING DIFFERING
        COLUMNS IN PAIRS OF LINES WHICH MISMATCH IN SECTIONS OF EQUAL
        LENGTH. THIS IS ESPECIALLY USEFUL FOR COMPARING PACKED DATA
        FILES.
        DEFAULT: NOT SELECTED.

WN   SPECIFY SIGNIFICANT LINE WIDTH (LENGTH) (10 <= N <= 150).
        W DETERMINES THE FIXED NUMBER OF COLUMNS OF EACH LINE WHICH
        WILL BE COMPARED. W IS IDEAL TO USE WHEN SEQUENCE INFORMA-
        TION IS PRESENT AT THE RIGHT EDGE OF THE TEXT FILE.

DEFAULT: W120.

EXAMPLE

SUPPOSE FILEA IS:

```
PROGRAM L2U(INPUT, OUTPUT);
 (* CONVERT CDC 6/12-ASCII LOWER-CASE
    LETTERS TO UPPER CASE.  *)
BEGIN
 WHILE NOT EOF(INPUT) DO
  BEGIN
   WHILE NOT EOLN(INPUT) DO
    BEGIN
     IF INPUT- <> CHR(76) THEN WRITE(INPUT-);
     GET(INPUT)
    END:
    READLN:
    WRITELN
   END:
  (*ALL DONE.*)
END.
```

AND FILEB IS:

```
PROGRAM U2L(INPUT, OUTPUT);
 (* CONVERT CDC ASCII UPPER-CASE LETTERS
    TO 6/12 LOWER CASE.  *)
BEGIN
 WHILE NOT EOF(INPUT) DO
  BEGIN
   WHILE NOT EOLN(INPUT) DO
    BEGIN
     IF INPUT- IN ¢'A'..'Z'! THEN WRITE(CHR(76));
     WRITE(INPUT-);
     GET(INPUT)
    END:
    READLN:
    WRITELN
   END:
END.
```

THEN A REPORT FROM COMPAR LOOKS LIKE THIS:

```
   COMPAR,L2U,U2L,LIST/C1,D,P.                 78/12/31.#20.23.25.
   COMPARE VERSION 3.0 CDC                     (78/12/19)

   OUTPUT OPTION     = DIFFERENCES.
   INPUT LINE WIDTH = 120 CHARACTERS.
   MATCH CRITERION  = 1 LINES.

   FILEA: L2U
   FILEB: U2L



       ****************************************
   MISMATCH: L2U LINES 1 THRU 3 <NOT EQUAL TO> U2L LINES 1 THRU 3:

 A    1.   PROGRAM L2U(INPUT, OUTPUT);
 B    1.   PROGRAM U2L(INPUT, OUTPUT);
                     ‾ ‾

 A    2.   (* CONVERT CDC 6/12-ASCII LOWER-CASE
 B    2.   (* CONVERT CDC ASCII UPPER-CASE LETTERS
                          ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾

 A    3.       LETTERS TO UPPER CASE.  *)
 B    3.       TO 6/12 LOWER CASE.  *)
               ‾‾‾‾‾‾‾‾ ‾ ‾‾‾‾‾‾‾‾‾‾‾‾‾ ‾‾

       ****************************************
   MISMATCH: L2U LINE 9 <NOT EQUAL TO> U2L LINES 9 THRU 10:

 A    9.       IF INPUT¬ <> CHR(76) THEN WRITE(INPUT¬);

 B    9.       IF INPUT¬ IN ¢'A'..'Z'! THEN WRITE(CHR(76));
 B   10.       WRITE(INPUT¬);

       ****************************************
   EXTRA TEXT ON L2U, BETWEEN LINES 15 AND 16 OF U2L

 A   15.   (*ALL DONE.*)
```

HOW COMPAR WORKS

      COMPAR EMPLOYS A SIMPLE BACKTRACKING-SEARCH ALGORITHM TO ISOLATE
MISMATCHES FROM THEIR SURROUNDING MATCHES.   THIS REQUIRES DYNAMIC
STORAGE ROUGHLY PROPORTIONAL TO THE SIZE OF THE LARGEST MISMATCH. AND
TIME ROUGHLY PROPORTIONAL TO THE SQUARE OF THE SIZE OF THE MISMATCH
FOR EACH MISMATCH. THUS IT MAY NOT BE FEASIBLE TO USE COMPAR ON
FILES WITH VERY LONG MISMATCHES.

HISTORY

COMPARE WAS DEVELOPED AS A PORTABLE PASCAL SOFTWARE TOOL BY JAMES MINER OF THE SOCIAL SCIENCE RESEARCH FACILITIES CENTER AT THE UNIVERSITY OF MINNESOTA, IN EARLY 1977. IT WAS WRITTEN IN STANDARD PASCAL AND DEVELOPED INITIALLY UNDER CDC 6000 PASCAL. ALTHOUGH THE ORIGINAL VERSION SIMPLY REPORTED DIFFERENCES IN A TEXTFILE, COMPARE WAS DESIGNED TO FIT NATURALLY INTO A LARGER TEXT-EDITING SYSTEM. PLANS FOR COMPARE'S ACCOMMODATING LATER ENHANCEMENTS TO GENERATE TEXT-EDITOR DIRECTIVES WERE MADE FROM THE BEGINNING. IN SUMMER OF 1977, JOHN STRAIT AT THE UNIVERSITY OF MINNESOTA COMPUTER CENTER ADAPTED COMPARE NOT ONLY TO GENERATE SUCH A MODIFICATIONS FILE, BUT ALSO FLAG-FORM OUTPUT AND USER-SELECTABLE OPTIONS.

COMPARE HAS BEEN DISTRIBUTED TO SEVERAL PASCAL ENTHUSIASTS IN THE UNITED STATES WHO HAVE MADE IT OPERATIONAL ON OTHER PASCAL IMPLEMENTA-TIONS. SEE PASCAL NEWS #12, MAY, 1978. PAGES 20-23. IN LATE 1978, WILLETT KEMPTON OF THE ANTHROPOLOGY DEPARTMENT AT THE UNIVERSITY OF CALIFORNIA BERKELEY, INSTALLED COMPARE (WITH NO CHANGES REQUIRED WHATSOEVER) UNDER BERKELEY UNIX PASCAL ON A PDP 11/70 COMPUTER SYSTEM. HE LATER ADAPTED THE PROGRAM TO NOTE COLUMN-WISE DIFFERENCES IN PAIRS OF DIFFERENT LINES AND MADE MINOR CHANGES TO THE FORMAT OF THE REPORT.

RICK MARCUS AND ANDY MICKEL AT THE UNIVERSITY OF MINNESOTA COMPUTER CENTER MADE MINOR ENHANCEMENTS TO COMPARE AND FULLY DOCUMEN-TED IT IT FOR RELEASE 3 OF PASCAL 6000 IN DECEMBER, 1978.

COMPARE SERVES AS A MODEL PROGRAM IN MANY RESPECTS. IT SERVES TO ILLUSTRATE JUST HOW POWERFUL AND FLEXIBLE SUCH A COMPARISON PROGRAM CAN BE.

AT DTNSRDC, COMPARE HAS BEEN RENAMED COMPAR TO AVOID CONFLICT WITH THE NOS/BE COMMAND COMPARE.

PROGRAM 'COPYEXT'

PURPOSE
    COPY UNIT RECORDS (ZERO BYTE TERMINATED) EXTRACTING
    SPECIFIED COLUMNS AND OPTIONALLY MOVING THEM AND OPTIONALLY
    ADD EDITOR SEQUENCING

FUNCTIONAL CATEGORIES: O1 M4

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    DEFAULT IS TO COPY FIRST 72 COLUMNS.

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   (FILE TO BE COPIED)
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        COPYEXT,,,<PARAMETERS>.
        (DO SOMETHING WITH TAPE2)

    FROM TTY
        ATTACH,TAPE1,....   (FILE TO BE COPIED)
        BEGIN,UTILITY,,COPYEXT,,,<PARAMETERS>.
        (DO SOMETHING WITH TAPE2)

    EXECUTE CARD PARAMETERS
        COPYEXT,INFILE,OUTFILE,REW,FROM,TO,AT,EDITSEQ,START,INCR,
        OUTPUT.
            INFILE   - INPUT FILE TO BE COPIED
            OUTFILE - OUTPUT FILE   (NOT REWOUND)
            REW   - INFILE REWIND OPTION
                        A   - REWIND AFTER USE
                        B   - REWIND BEFORE USE
                        R   - REWIND BEFORE AND AFTER USE
                        U   - REWIND BEFORE, REWIND AND UNLOAD
                                 AFTER USE
                        OTHER - NO REWIND (DEFAULT)
                        (ANY WORDS BEGINNING WITH THESE LETTERS
                        WILL PRODUCE THE SAME RESULTS)
            FROM   - STARTING COLUMN FOR EXTRACTING
                        (1-140; DEFAULT: 1)
                        (TO COPY COLUMN 1, IN ADDITION TO THE FIELD
                        SPECIFIED, ENTER FROM AS A NEGATIVE NUMBER.
                        BECAUSE - IS A SPECIAL CHARACTER, WHEN USED,
                        THIS PARAMETER MUST BE ENCLOSED IN $...$.
                        THIS IS USEFUL IN COPYING A DOCUMENT TO ALSO
                        COPY THE CARRIAGE CONTROL CHARACTER. SEE
                        EXAMPLE 3.)
            TO   - ENDING COLUMN FOR EXTRACTING
                        (1-140; DEFAULT: 72)
            AT   - FIRST COLUMN IN OUTFILE FOR EXTRACTED
                        RECORD (1-140; DEFAULT: 1)

```
                    EDITSEQ - EDITOR SEQUENCING OPTION
                         'E'          - ADD EDITOR SEQUENCING
                        ANYTHING ELSE - NO EDITOR SEQUENCING
                    START   - STARTING SEQUENCE NUMBER
                              (DEFAULT: 100)
                    INCR    - SEQUENCING INCREMENT
                              (DEFAULT: 10)
                    OUTPUT  - LISTABLE OUTPUT (FTN ERROR MESSAGES)


          DEFAULT EXECUTE CARD
             COPYEXT,TAPE1,TAPE2,NOREW,1,72,1,NOEDSEQ,100,1,OUTPUT.


          DEFAULT PL: 5000 LINES


          FL NEEDED TO LOAD: 30000B
          FL NEEDED TO RUN : 20000B


   ERROR MESSAGES
      CANNOT COPY ALL CHARACTERS
          THE SPECIFIED FIELD (FROM THRU TO) WILL NOT FIT IN
          OUTFILE STARTING AT COLUMN AT.  ONLY 141-AT COLUMNS
          WILL BE MOVED.
      FROM GT TO
          NEGATIVE FIELD SIZE NOT VALID - JOB TERMINATED
      INCR INVALID - 10 USED
          USER SPECIFIED A NON-POSITIVE-INTEGER FOR EDITOR
          SEQUENCING INCREMENT.  DEFAULT OF 10 IS USED.
      INPUT FILE EMPTY
          INPUT FILE AT EOI -- JOB TERMINATED
          IF REW=B, R OR U WAS SPECIFIED, FILE HAS NO INFORMATION
          IN IT.
      START INVALID - 100 USED
          USER SPECIFIED A NON-POSITIVE-INTEGER FOR STARTING EDITOR
          SEQUENCE NUMBER.  DEFAULT OF 100 USED.


   INPUT/OUTPUT UNITS
      UNIT  #      LFN                             USE
      -------     -------     ---------------------------------------------
                  OUTPUT      FTN ERROR MESSAGES
                  TAPE1       INPUT FILE TO BE COPIED
                  TAPE2       OUTPUT FILE (NOT REWOUND)
                  DAYFILE     PROGRAM ERROR MESSAGES


   EXAMPLES
      1. COPY A COMPILE FILE AND REMOVE IDENTIFICATION COLUMNS (73
         ON):
             COPYEXT,INFILE,OUTFILE,R.

      2. EXTRACT A FORTRAN SOURCE PROGRAM FROM AN OUTPUT LISTING
         (NOTE THAT PAGE HEADING RECORDS WILL HAVE TO BE REMOVED
         BY THE USER):
             COPYEXT,INFILE,OUTFILE,R,20,91.      (72 COLUMNS)

      3. MOVE COLUMNS 10-72 OF A DOCUMENT TO COLUMNS 2 ON AND
         RETAIN THE CARRIAGE CONTROL CHARACTERS:
             COPYEXT,INFILE,OUTFILE,R,S-10S,,2.
```

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
        CLOSEM     FILESQ     GET        IFETCH     MAX0
        MIN0       OPENM      PUT        REMARK     WEOR
   OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE I-FORMAT DECODE
        IPAKLFT - SQUEEZE LEFT AND REMOVE BLANKS
        LASTC   - FIND LAST NON-BLANK CHARACTER
        MOVSTR  - MOVE CHARACTER STRING
        PUTCHA  - INSERT CHARACTER INTO ARRAY
        SETREW  - DECODE REWIND OPTION
        VFILL   - FILL ARRAY WITH WORD

ARITHMETIC STATEMENT FUNCTIONS
   L11FMT  - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
   R11FMT  - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 02/25/77

DATE(S) REVISED
   11/04/77 - ADD NEGATIVE 'FROM' TO ALSO COPY COL 1

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:    UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'COPYLIB'

PURPOSE
    FROM AN EDITLIB LISTLIB LISTING, CREATE SORTED (OR UNSORTED)
    DIRECTIVES TO COPY AN EDITLIB USER LIBRARY

FUNCTIONAL CATEGORIES: K3

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    FOR EDITLIB SYSTEM LIBRARIES, USE PROGRAM USYSLIB.

EXECUTION
    FROM BATCH AND TTY
        USE PUBLIC PROCEDURE 'COPYLIB'.

    EXECUTE CARD PARAMETERS
        COPYLIB,INFILE,LIBDIR,NEWLIB,SORT,OUTPUT.
            INFILE - INPUT FILE CONTAINING EDITLIB LISTLIB LIST
            LIBDIR - OUTPUT FILE CONTAINING THE UPDATE
                      DIRECTIVES
            NEWLIB - LFN OF NEW LIBRARY
            SORT   - OMITTED OR 'SORT' - SORT ROUTINE NAMES
                      ANYTHING ELSE   - DO NOT SORT
            OUTPUT - FTN ERROR MESSAGES

    DEFAULT EXECUTE CARD
        COPYLIB,TAPE1,LIBDIR,NEWLIB,SORT,OUTPUT.

    FL NEEDED TO LOAD: 35000B
    FL NEEDED TO RUN : 25000B
        (PROGRAM ADJUSTS CORE AS REQUIRED)

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
              LIBDIR   OUTPUT FILE CONTAINING EDITLIB
                         DIRECTIVES
              NEWLIB   FILE TO CONTAIN NEW LIBRARY
                         (PF SPACE IS OBTAINED BUT NOTHING IS
                         WRITTEN ON THE FILE)
              OUTPUT   LISTABLE OUTPUT (FTN ERROR MESSAGES)
       1   TAPE1   INPUT FILE CONTAINING EDITLIB LISTLIB
                         LISTING

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM      FILESQ      GET         IFETCH      MOVLEV
        OPENM       PUT         REMARK
    OTHERS
        ASORTMV - SORT ARRAY USING MOVLEV
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LEFTADJ - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
        MOVSTR  - MOVE A STRING OF CHARACTERS
        PUTCHA  - INSERT A CHARACTER INTO AN ARRAY
        REDUCE  - ADJUST CORE UP AND DOWN
        REPLAC  - REPLACW ONE CHARACTER WITH ANOTHER
        REQUEST - REQUEST,NEWLIB,*PF.

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT      L61FMT      L81FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R110FMT     R47FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/15/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:     UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:     UTILITY
```

PROGRAM 'COPYRE'

PURPOSE
    COPY AND REARRANGE FILE OF ZERO BYTE TERMINATED RECORDS
    (150 CHARACTERS MAXIMUM PER RECORD)

FUNCTIONAL CATEGORIES: O1 K1

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    UP TO 500 RANGE PAIRS (CARDS) CAN BE PROCESSED AT A TIME.

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   (FILE TO BE COPIED AND RE-ARRANGED)
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        COPYRE.
        CATALOG,TAPE2,....
        '   7/8/9   EOR
            (RANGE CARDS. END WITH 0,0)
        "   6/7/8/9   EOF

    FROM TTY
        ATTACH,TAPE1,....   (FILE TO BE COPIED AND RE-ARRANGED)
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        CONNECT,INPUT,OUTPUT.
        REQUEST,TAPE2,*PF.
        COPYRE.
            (ENTER RANGES - THERE IS NO PROMPTING - END WITH 0,0)
        CATALOG,TAPE2,....

    EXECUTE CARD PARAMETERS
        COPYRE,INPUT,INFILE,OUTFILE,REW,OUTPUT.
            INPUT   - RANGE CARD INPUT FILE
            INFILE - FILE TO BE COPIED AND RE-ARRANGED
            OUTFILE - OUTPUT (RE-ARRANGED) FILE
            REW   - INFILE REWIND OPTION
                    A   - REWIND AFTER USE
                    B   - REWIND BEFORE USE
                    R   - REWIND BEFORE AND AFTER USE
                    U   - REWIND BEFORE, REWIND AND UNLOAD
                              AFTER USE (IF ABEND, U IS CHANGED
                              TO R)
                    OTHER - NO REWIND (DEFAULT)
                    (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                    PRODUCE THE SAME RESULTS.)
            OUTPUT - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        COPYRE,INPUT,TAPE1,TAPE2,NOREW,OUTPUT.

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 34000B
FL NEEDED TO RUN : 24000B
    (PROGRAM ADJUSTS CORE UP AND DOWN AS REQUIRED)

DATA CARDS
    RANGE SPECIFICATION CARDS ARE FREE-FORM. EACH CARD MUST
    CONTAIN TWO (2) NUMBERS, EVEN IF THE SECOND IS 0, SEPARATED
    BY A COMMA (,).
    THE FIRST NUMBER IS THE STARTING RECORD NUMBER.
    THE SECOND NUMBER IS THE ENDING RECORD NUMBER.
    IF R1 GT R2, PROGRAM ABORTS.
    IF R1 GT MAXIMUM NUMBER OF RECORDS IN INFILE,
    PROGRAM ABORTS.
    IF R2 GT MAXIMUM NUMBER OF RECORDS IN INFILE, THE MAXIMUM
    NUMBER IS SUBSTITUTED.
    IF R2 IS 0, R1 IS SUBSTITUTED.
    IF R1 IS 0, IT SIGNALS THE END OF THE RANGE CARDS.
    END RANGE CARDS WITH 0,0.

ERROR MESSAGES
    INVALID RANGE - FATAL
        SECOND RANGE VALUE MUST BE ZERO OR GREATER THAN FIRST
        VALUE

    MORE THAN 500 RANGES
        PROGRAM CAN HANDLE ONLY 500 RANGE PAIRS AT A TIME

    NO RANGES SPECIFIED
        SELF-EXPLANATORY

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	INPUT	RANGE CARDS INPUT FILE
	OUTPUT	LISTABLE OUTPUT
	TAPE1	FILE TO BE COPIED AND RE-ARRANGED
	TAPE2	OUTPUT (RE-ARRANGED) FILE

METHOD
    1. READ RANGE CARDS.
    2. READ INPUT FILE INTO CORE.
    3. VERIFY AND LIST RANGES.
    4. IF ALL RANGES VALID, COPY FILE AS REQUESTED.

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      CLOSEM     EOF        FILESQ     GET        IFETCH
      MOVLEV     OPENM      PUT        RECOVR     REMARK
   PART OF PROGRAM
      EOJ      - ABNORMAL TERMINATION ROUTINE
   OTHERS
      FTNRFL   - GET CURRENT FIELD LENGTH
      GETLFNS  - GET ACTUAL LOCAL FILE NAMES
      LASTC    - FIND LAST NON-BLANK CHARACTER
      REDUCE   - ADJUST CORE AS REQUIRED
      SETREW   - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
   NONE

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 03/30/76

DATE(S) REVISED
   04/02/76
   04/26/76
   05/20/76 - INCREASE TO 150 CHARACTER RECORDS
   12/11/78 - INCREASE TO 500 RANGE PAIRS

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:    UTILITYPL.ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'COPYSEL'

PURPOSE
    COPY AND REARRANGE FILE OF ZERO BYTE TERMINATED RECORDS
    (150 CHARACTERS MAXIMUM PER RECORD: FILE PROCESSED DIRECTLY)

FUNCTIONAL CATEGORIES: O1 K1

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    'COPYSEL' IS SIMILAR TO 'COPYRE'. 'COPYSEL' WORKS DIRECTLY
    WITH INFILE; 'COPYRE' READS THE ENTIRE FILE INTO CORE FIRST.
    USE 'COPYSEL' IF INFILE IS TO BE PROCESSED, FOR THE MOST
    PART, IN THE FORWARD DIRECTION. USE 'COPYRE' IF THERE IS A
    MUCH RE-ARRANGING TO BE DONE. USE 'COPYSEL' IF INFILE IS
    TOO LARGE FOR 'COPYRE'.

EXECUTION
    FROM BATCH
        ATTACH,TAPE1......   (FILE TO BE COPIED AND RE-ARRANGED)
        ATTACH,UTILITY.
        REQUEST,TAPE2,*PF.
        LDSET,LIB=UTILITY.
        COPYSEL.
        CATALOG,TAPE2,....
       '   7/8/9   EOR
         (RANGE CARDS. END WITH 0,0)
      "   6/7/8/9   EOF

    FROM TTY
        ATTACH,TAPE1,....   (FILE TO BE COPIED AND RE-ARRANGED)
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        DISCONT,OUTPUT.
        REQUEST,TAPE2,*PF.
        COPYSEL.
         (ENTER RANGES - THERE IS NO PROMPTING - END WITH 0,0)
        ROUTE,OUTPUT,DC=PR,....
        CATALOG,TAPE2,....

    EXECUTE CARD PARAMETERS
        COPYSEL,INPUT,INFILE,OUTFILE,REW,OUTPUT.
            INPUT   - RANGE CARD INPUT FILE
            INFILE - FILE TO BE COPIED AND RE-ARRANGED
            OUTFILE - OUTPUT (RE-ARRANGED) FILE
            REW   - INFILE REWIND OPTION
                 A   - REWIND AFTER USE
                 B   - REWIND BEFORE USE
                 R   - REWIND BEFORE AND AFTER USE
                 U   - REWIND BEFORE, REWIND AND UNLOAD
                        AFTER USE (IF ABEND, U IS CHANGED
                        TO R)
               OTHER - NO REWIND (DEFAULT)
               (ANY WORDS BEGINNING WITH THESE LETTERS WILL
               PRODUCE THE SAME RESULTS.)
            OUTPUT - LISTABLE OUTPUT

```
DEFAULT EXECUTE CARD
    COPYSEL,INPUT,TAPE1,TAPE2,NOREW,OUTPUT.

FL NEEDED TO LOAD: 32000B
FL NEEDED TO RUN : 22000B
```

DATA CARDS
    RANGE SPECIFICATION CARDS ARE FREE-FORM. EACH CARD MUST
    CONTAIN TWO (2) NUMBERS, EVEN IF THE SECOND IS 0, SEPARATED
    BY A COMMA (,).
    THE FIRST NUMBER IS THE STARTING RECORD NUMBER.
    THE SECOND NUMBER IS THE ENDING RECORD NUMBER.
    IF R1 GT R2, PROGRAM ABORTS.
    IF R1 GT MAXIMUM NUMBER OF RECORDS IN INFILE,
    PROGRAM ABORTS.
    IF R2 GT MAXIMUM NUMBER OF RECORDS IN INFILE. INFILE IS
    COPIED TO END-OF-FILE.
    IF R2 LT 0, INFILE IS COPIED TO END-OF-FILE.
    IF R2 IS 0, R1 IS SUBSTITUTED.
    IF R1 IS 0. IT SIGNALS THE END OF THE RANGE CARDS.
    END RANGE CARDS WITH 0.0.

ERROR MESSAGES
    INPUT FILE EMPTY
        INPUT FILE IS EMPTY OF NOT REWOUND

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	DAYFILE	ERROR MESSAGE IF INPUT FILE EMPTY
	INPUT	RANGE CARDS INPUT FILE
	OUTPUT	LISTABLE OUTPUT
	TAPE1	FILE TO BE COPIED AND RE-ARRANGED
	TAPE2	OUTPUT (RE-ARRANGED) FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE

CLOSEM	DATE	EOF	FILESQ	GET
IFETCH	OPENM	PUT	RECOVR	REMARK
REWND	SKIP	TIME		

    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LASTC   - FIND LAST NON-BLANK CHARACTER
        SETREW - DECODE REWIND OPTION

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/27/76

DATE(S) REVISED
    05/20/76 - V1.1 - RECORD LENGTH CHANGED TO 150 CHARACTERS
    07/28/77 - V1.2 - SHORTEN OUTPUT SUMMARY

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'CV029'

PURPOSE
    CONVERT TO 029 PUNCH CODE

FUNCTIONAL CATEGORIES: J1 M2 O1

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    THE INPUT FILE IS REWOUND BEFORE AND AFTER USE, EXCEPT WHEN
    THE LFN IS 'INPUT'.

    THE OUTPUT CONVERTED FILE IS NOT REWOUND.

    THE INPUT FILE IS READ THROUGH END-OF-INFORMATION.

    EMBEDDED END-OF-RECORDS AND END-OF-FILES ARE COPIED.

EXECUTION
    FROM BATCH AND TTY
        ATTACH,ANY.....   (FILE TO BE CONVERTED)
        BEGIN.CV029,,ANY,<TID-FOR-ROUTE>.

          -OR-

        ATTACH,ANY.....   (FILE TO BE CONVERTED)
        BEGIN,UTILITY,,CV029,ANY.
        ROUTE,ZZZ029,DC=PU,EC=80COL,TID=.... (USER MUST COMPLETE)

    EXECUTE CARD PARAMETERS
        CV029,INFILE,OUTFILE.OUTPUT.
            INFILE - FILE TO BE CONVERTED
                      (REWOUND, UNLESS 'INPUT')
            OUTFILE - CONVERTED FILE (80-COLUMN BINARY)
                      (NOT REWOUND)
            OUTPUT - FTN ERROR MESSAGES

    DEFAULT EXECUTE CARD
        CV029,INPUT,ZZZ029,OUTPUT.

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 17000B

DAYFILE MESSAGES
    INPUT FILE EMPTY
        INPUT FILE HAS NO INFORMATION

     NNNNN CARDS PUNCHED
    (NNNNN DATA, NNN EOR, NN EOF)
        OUTPUT SUMMARY

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
                INPUT   INPUT FILE
       1   ZZZ029   CONVERTED FILE
                DAYFILE   NUMBER OF CARDS PROCESSED

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      AND        CLOSEM     FILESQ     GET        IFETCH
      OPENM      PUT        REMARK     SHIFT
   PART OF PROGRAM
      BEOF    - WRITE END-OF-FILE (ENTRY IN BEOR)
      BEOR    - WRITE END-OR-RECORD
      BPUNCH  - WRITE DATA RECORD
      UNPACK  - BREAK WORD INTO 10 CHARACTERS
   OTHERS
      GETLFNS - GET ACTUAL LOCAL FILE NAMES
      IFMTEN  - FAST I-FORMAT ENCODE
      REQUEST - REQUEST,ZZZ029,*Q.

AUTHORS
   ?                   - ORIGINAL AUTHOR OF CV29
   SHARON E GOOD   - DTNSRDC CODE 1892.1
   DAVID V SOMMER  - DTNSRDC CODE 1892.2
   ED ZIVI         - DTNSRDC CODE 2731 (SUBROUTINES)

DATE WRITTEN: UNKNOWN

DATE(S) REVISED
   10/10/75
   1978      - SEG
   10/17/78 - COMPLETE REWRITE, NAME CHANGED TO CV029
              (DVS. USING EZ SUBROUTINES AND RECORD MANAGER)

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:   UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:  UTILITY
```

```
PROGRAM 'DECK'

PURPOSE
    LIST UPDATE 'SOURCE' FILE DECK/COMDECK NAMES, SEQUENCE
    NUMBER AND NUMBER OF CARDS

FUNCTIONAL CATEGORIES:   Q7

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NUMBER OF RECORDS DOES NOT INCLUDE *DECK/*COMDECK CARDS.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,....        (UPDATE 'SOURCE' FILE)
        LDSET,LIB=UTILITY.
        DECK.

    FROM TTY
        ATTACH,UTILITY.
        ATTACH,TAPE1,....        (UPDATE 'SOURCE' FILE)
        LIBRARY,UTILITY.
        DECK,,OUT.
        ROUTE,OUT.DC=PR,....

    EXECUTE CARD PARAMETERS
        DECK,INFILE,OUTPUT,REW,LIB.PD,ID.
            INFILE  - INPUT FILE (UPDATE 'SOURCE' FILE)
            OUTPUT  - LISTABLE OUTPUT
            REW     - INFILE REWIND OPTION
                        A     - REWIND AFTER USE
                        B     - REWIND BEFORE USE
                        R     - REWIND BEFORE AND AFTER USE
                        U     - REWIND BEFORE, REWIND AND UNLOAD
                                AFTER USE
                      OTHER - NO REWIND (DEFAULT)
                      (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                      PRODUCE THE SAME RESULTS)
            LIB     - (FIRST PART OF) PFN
                      (IF OMITTED, HEADING IS: "LFN: INFILE")
            PD      - SECOND PART OF PFN
                        D       - LIB_DOCUMENTATION
                        P       - LIB_PL
                      OMITTED - LIB
                      OTHER   - LIB_PD
            ID      - ID UNDER WHICH LIB_PD IS CATALOGED
                      (IF OMITTED, NO ID IN HEADING)

    DEFAULT EXECUTE CARD
        DECK,TAPE1,OUTPUT,NOREW.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B
        (PROGRAM ADJUSTS CORE AS REQUIRED)
```

ERROR MESSAGES
    INPUT FILE EMPTY
        INPUT FILE HAS NO INFORMATION OR IS NOT REWOUND

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
                DAYFILE   TOTALS ARE PUT INTO DAYFILE
                OUTPUT   LISTABLE OUTPUT
                TAPE1   INPUT UPDATE 'SOURCE' FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
            AND   CLOSEM   DATE   FILESQ   GET
            IFETCH   MOD   MOVLEV   OPENM   OR
            RECOVR   REMARK   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION OUTINE
    OTHERS
        ADJL   - SQUEEZE LEFT (ENGLISH WORDS)
        CENTER - CENTER PHRASE IN LINE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IPAKLFT - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
        LASTC   - FIND LAST NON-BLANK CHARACTER IN STRING
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ. ZERO-FILLED)
        L11FMT   L51FMT   L81FMT   L97FMT   L910FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R16FMT   R19FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/04/73

DATE(S) REVISED
    03/07/75
    10/07/75 -   CHANGE TO RECORD MANAGER
                        (SAVES ABOUT 30 PCT CP TIME)
    01/23/76 - V2.0 - REWRITTEN TO CUT PRINTOUT IN HALF
                        (SAME FORM OUTPUT AS 'DECKLST')
    02/02/76 - V2.1
    05/04/76 - V2.2 - ADD OPTIONAL USER HEADING
    06/10/76 - V2.3 - ADD SEARCH FOR *DECK, AND *COMDECK,
    11/13/77 - V2.4 - FIX HEADING WHEN ONLY ONE DECK

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DECKLST'

PURPOSE
    LIST UPDATE 'SOURCE' FILE DECK/COMDECK NAMES, SEQUENCE
    NUMBER, NUMBER OF CARDS, NUMBER OF LINES AND PAGES (IF
    COLUMN 1 CARRIAGE CONTROL IS USED).

    (LIST CONTENTS OF A DOCUMENTATION FILE)

FUNCTIONAL CATEGORIES: Q7

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NUMBER OF CARDS DOES NOT INCLUDE *DECK/*COMDECK CARDS.

    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (DOCUMENT FILE)
        LDSET.LIB=UTILITY.
        DECKLST.

    FROM TTY
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (DOCUMENT FILE)
        LIBRARY,UTILITY.
        DECKLST.,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        DECKLST,INFILE,OUTPUT,REW,LIB,PD,ID.
            INFILE - INPUT FILE (DOCUMENT FILE)
            OUTPUT - LISTABLE OUTPUT
            REW   - INFILE REWIND OPTION
                    A   - REWIND AFTER USE
                    B   - REWIND BEFORE USE
                    R   - REWIND BEFORE AND AFTER USE
                    U   - REWIND BEFORE, REWIND AND UNLOAD
                              AFTER USE
                  OTHER - NO REWIND (DEFAULT)
                  (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                  PRODUCE THE SAME RESULTS)
            LIB   - (FIRST PART OF) PFN
                      (IF OMITTED, HEADING IS: "LFN: INFILE")
            PD   - SECOND PART OF PFN
                    D   - LIB_DOCUMENTATION
                    P   - LIB_PL
                    OMITTED - LIB
                    OTHER   - LIB_PD
            ID   - ID UNDER WHICH LIB_PD IS CATALOGED
                      (IF OMITTED, NO ID IN HEADING)

    DEFAULT EXECUTE CARD
        DECKLST,TAPE1,OUTPUT,NOREW.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B

ERROR MESSAGES
    INPUT FILE EMPTY
        INPUT FILE HAS NO INFORMATION OR IS NOT REWOUND

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---.
               DAYFILE   TOTALS ARE PUT INTO DAYFILE
               OUTPUT   LISTABLE OUTPUT
               TAPE1   INPUT DOCUMENT FILE

EXECUTION
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   DATE   FILESQ   GET
        IFETCH   MOD   MOVLEV   OPENM   OR
        RECOVR   REMARK   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        ADJL   - SQUEEZE LEFT (ENGLISH WORDS)
        CENTER   - CENTER PHRASE IN LINE
        GETLFNS   - GET ACTUAL LOCAL FILE NAMES
        IPAKLFT   - SQUEEZE LEFT AND REMOVE BLANKS AND OOB
        LASTC   - FIND LAST NON-BLANK CHARACTER IN STRING
        SETREW   - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L51FMT   L81FMT   L97FMT   L910FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R16FMT   R19FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 02/20/74

DATE(S) REVISED
    11/11/75 - V2.0 - CONVERTED TO RECORD MANAGER CALLS
    01/23/76 - V2.1
    02/02/76 - V2.2
    05/05/76 - V2.3 - ADD OPTIONAL USER HEADING
    06/10/76 - V2.4 - ADD SEARCH FOR *DECK, AND *COMDECK,
    11/13/77 - V2.5 - FIX HEADING WHEN ONLY ONE DECK

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DEKSORT'

PURPOSE
    SORT IDENT AND DECK LISTINGS FROM UPDATE OUTPUT FILE

FUNCTIONAL CATEGORIES: Q7 M1

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   EOF   MOD   MOVLEV   SHIFT
        SYSTEM
    PART OF PROGRAM
        FILL   - EXTRACT IDENT AND DECK NAMES
        HANDLE - FIND IDENT AND DECK NAMES
        SORTPRT - CALL SORT AND PRINT SORTED DATA
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        PAKLFT - SQUEEZE LEFT AND REMOVE BLANKS
        REDUCE - ADJUST FIELD LENGTH
        SSORTL - FTN LOGICAL SHELL SORT
        ZBLANK - CHANGE BLANKS TO 00B AND VICE VERSA

ARITHMETIC STATEMENT FUNCTIONS
    L11FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    NROWS   - COMPUTE NUMBER OF ROWS IN PRINTOUT

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
       1   TAPE1   INPUT FILE (UPDATE OUTPUT LISTING FROM
                            O PARAMETER)
                INPUT   OPTIONAL INPUT FILE FOR 40-CHAR TITLE
                OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        ATTACH,OLDPL,....   (UPDATE LIBRARY TO BE LISTED)
        UPDATE,P,C=0,O=ANY.
        BEGIN.UTILITY,,DEKSORT,ANY,....

    FROM TTY
        ATTACH,OLDPL,....   (UPDATE LIBRARY TO BE LISTED)
        UPDATE,P,C=0,O=ANY.
        BEGIN.UTILITY,,DEKSORT,ANY,OUT,....
        ROUTE,OUT,DC=PR,....

EXECUTE CARD PARAMETERS
    DEKSORT,INFILE,OUTPUT,OLD,PL,ID,INPUT.
        INFILE - INPUT FILE (UPDATE LISTING)
        OUTPUT - LISTABLE OUTPUT
        OLD   - IF 0, READ 40-CHARACTER TITLE FROM 'INPUT'
                  IF ANYTHING ELSE, OLD AND PL ARE PFN OF
                  UPDATE LIBRARY BEING LISTED (OLD AND PL ARE
                  EACH 0-7 CHARACTERS)
                  (DEFAULT: OLD)
        PL   - SECOND HALF OF PFN (IF OLD NE 0)
                  (DEFAULT: PL)
        ID   - ID UPDATE LIBRARY IS CATALOGED UNDER
                  (IF OLD NE 0)
                  (IF OMITTED, ID IS NOT PUT INTO HEADING)
        INPUT   - IF OLD=0, THIS FILE CONTAINS UP TO 1
                  CARD CONTAINING A 40-CHARACTER TITLE.

    NOTE: IF LFN IS 0, THE HEADING WILL CONTAIN THE 40
          CHARACTERS READ FROM 'INPUT'.
          IF OLD, PL, ID OMITTED, HEADING WILL CONTAIN
          'OLDPL'.
          IF OLD, PL OMITTED AND ID IS CXXX, HEADING WILL
          CONTAIN 'OLDPL,ID=CXX'.
          ETC.

    DEFAULT EXECUTE CARD
        DEKSORT,TAPE1,OUTPUT.

    FL NEEDED TO LOAD: 26000B
    FL NEEDED TO RUN : 16000B + TABLE SPACE (ABOUT 1 WORD PER
                                 IDENT AND DECK NAME)
        (PROGRAM ADJUSTS CORE AS REQUIRED)

AUTHOR
    S. DERRY - NSWC, DAHLGREN, VA.
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 08/12/75 - SD

DATE(S) REVISED
    06/08/76 - DVS - INPUT MODIFIED TO ALLOW INFO IN EXEC CARD,
                     EXPAND HEADING, STREAMLINE PRINTOUT,
                     PUT LARGE ARRAY IN BLANK COMMON (TO REDUCE
                     ABSOLUTE DECK SIZE AND LOADING FL) AND GET
                     CORE FOR NAME TABLE DYNAMICALLY TO REDUCE
                     CORE REQUIREMENT AND ELIMINATE TABLE
                     OVERFLOW.

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DFDATIM'

PURPOSE
   PUT DATE/TIME INTO DAYFILE

FUNCTIONAL CATEGORIES: Q0

LANGUAGE: CDC 6000 CP COMPASS

REMARKS
   NONE

EXECUTION
   FROM BATCH
      ATTACH,UTILITY.
      LDSET,LIB=UTILITY.   OR   LIBRARY,UTILITY.
      DFDATIM.

   FROM TTY
      BEGIN,UTILITY,,DFDATIM.

   EXECUTE CARD PARAMETERS
      DFDATIM.

   DEFAULT EXECUTE CARD
      DFDATIM.

   FL NEEDED TO LOAD: 11000B
   FL NEEDED TO RUN : 100B

OUTPUT UNITS
    LFN   USE
   -------   ---
   DAYFILE   DATE AND TIME MESSAGE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      NONE
   OTHERS
      NONE

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 06/20/74 (V2.0)

DATE(S) REVISED

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY: UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DMPFIL'

PURPOSE
    DUMP FIRST N WORDS OF EACH LOGICAL RECORD IN M FILES

FUNCTIONAL CATEGORIES: N2

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 12/01/74

DATE(S) REVISED

REMARKS
    OUTPUT IS SUITABLE FOR TTY. EACH WORD IS LISTED ON ONE LINE
    IN BOTH OCTAL AND CHARACTER AND IS PRECEDED BY THE
    LOGICAL RECORD NUMBER (DECIMAL AND OCTAL). PARITY
    ERRORS, IF ANY, WILL BE FLAGGED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        BUFFER IN
        LENGTH
        MINO
        RECOVR
        REMARK
        UNIT
    OTHERS
        EOJ   - ABNORMAL TERMINATION ROUTINE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE I-FORMAT DECODE

INPUT/OUTPUT UNITS
    FORTRAN   LOCAL
    LOGICAL   FILE
    U N I T   NAME   USE
    -------   -------   ---
       1   TAPE1   FILE TO BE DUMPED
                OUTPUT   LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1. . . .   (FILE TO BE DUMPED)
        DMPFIL.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1. . . .   (FILE TO BE DUMPED)
        CONNECT,OUTPUT.
        DMPFIL.

```
EXECUTE CARD PARAMETERS
    DMPFIL,INFILE,OUTPUT,NWORDS,MFILES,REW.
        INFILE - INPUT FILE TO BE DUMPED
        OUTPUT - LISTABLE OUTPUT
        NWORDS - NUMBER OF WORDS OF EACH LOGICAL RECORD TO BE
                 DUMPED  (DEFAULT: 1 WORD)
        MFILES - NUMBER OF FILES OF A MULTI-FILE FILE TO BE
                 PROCESSED  (PROGRAM WILL STOP IF DOUBLE EOF
                 IS READ FIRST)  (DEFAULT: 1 FILE)
        REW    - REWIND OPTION
                 A      - REWIND INFILE AFTER USE
                 B      - REWIND INFILE BEFORE USE
                 R      - REWIND INFILE BEFORE AND AFTER USE
                 OTHER - NO REWIND (DEFAULT)
                 (ANY WORDS BEGINNING WITH 'A', 'B', 'R'
                 WILL PRODUCE THE SAME RESULTS)

DEFAULT EXECUTE CARD
    DMPFIL,TAPE1,OUTPUT,1,1,NOREW.

FL NEEDED TO LOAD: 25000B
```

PURPOSE
PREPARE (SUB)PROGRAM AND CATALOGUED PROCEDURE DOCUMENTATION

FUNCTIONAL CATEGORIES: Q6

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
IF ANY QUESTION IS ANSWERED WITH A SINGLE ENTRY OF ? , A
LONG(ER), MORE DETAILED DESCRIPTION OF THE CURRENT ITEM
IS TYPED.

IF ANY QUESTION (EXCEPT FIRST FOUR (4)) IS ANSWERED WITH A
SINGLE ENTRY OF @ , THE CURRENT DOCUMENT IS TERMINATED.

THE GENERATED DOCUMENT HAS CARRIAGE CONTROL IN COLUMN 1:
SECTION HEADINGS BEGIN IN COLUMN 10: SUB-HEADINGS BEGIN IN
COLUMN 13: USER-SUPPLIED INFORMATION USUALLY BEGINS IN
COLUMNS 13 OR 16.

EXECUTION
FROM BATCH
    NOT DESIGNED FOR BATCH USE

FROM TTY
    CONNECT,OUTPUT
    ATTACH,UTILITY.
    LIBRARY,UTILITY.
    DOC.
       (CREATE DOCUMENT IN FILE 'DOCMNT')
    EDITOR
    EDIT,DOCMNT,S
       (MODIFY, IF NECESSARY. INDICATE START OF EACH PAGE
        BY PUTTING A '1' IN COLUMN 1 OF EACH LINE WHICH IS TO
        BE THE FIRST LINE OF A PAGE.)
    SAVE,NEWDOC.N
    LINER,NEWDOC.
       (WILL COUNT PAGES AND LINER PER PAGE. IF ANY PAGE HAS
        MORE THAN 59 LINES, GO BACK AND RESTRUCTURE THE
        DOCUMENT.)
    BYE
    DOCIT,NEWDOC,FILE.
    (DO SOMETHING WITH 'FILE' -- PERHAPS USE PROCEDURES
     'DOCADD' OR 'DOCREPL' TO PUT IT INTO A DOCUMENT FILE)

    EXECUTE CARD PARAMETERS
       DOC,DOCMNT,OPT.
           DOCMNT - CREATED DOCUMENT(S)
                     (MAY BE CATALOGED)
           OPT   - OPTION
                     LONG - TYPE LONG DESCRIPTION AT START OF
                             EXECUTION (DEFAULT)
                     Q   - DO NOT TYPE LONG DESCRIPTION
                     NEW   - TYPE DESCRIPTION OF NEW FEATURES
                     OTHER - QUICK ENTRY OF ANSWERS TO FIRST 4
                             QUESTIONS

DEFAULT EXECUTE CARD
    DOC,DOCMNT,LONG.

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 46000B
FL NEEDED TO RUN : 36000B

DATA ENTRIES
    THE DATA REQUESTED IS SUMMARIZED BELOW AND ON PAGE 3.
    EACH ITEM IS DISCUSSED IN GREATER DETAIL STARTING ON PAGE 4.

    ITEMS IN THE DOCUMENT ARE ENTERED IN RESPONSE TO QUESTIONS.
    THE RESPONSES ARE ONE LINE OR A VARIABLE NUMBER OF LINES.

    VARIABLE LENGTH SECTIONS HAVE (:) IN THE PROMPTING MESSAGE.
    EACH CONSISTS OF 0 OR MORE LINES AND IS TERMINATED BY A
    SEPARATE ENTRY OF : OR =. TO ERASE THE PREVIOUS LINE,
    USE A SEPARATE ENTRY OF MINUS (-).

    ALL (Y/N) RESPONSES: Y (OR ANY WORD STARTING WITH Y)=YES:
    ANYTHING ELSE=NO. IN THE DISCUSSIONS BELOW, 'ENTER Y' MEANS
    ENTER ANY WORD BEGINNING WITH Y; 'ENTER N' MEANS ENTER ANY
    WORD NOT BEGINNING WITH Y.'

    A SEPARATE ENTRY OF @ WILL IMMEDIATELY TERMINATE THE
    CURRENT DOCUMENT.

    A SEPARATE ENTRY OF ? WILL PROVIDE A LONG(ER) FORM OF THE
    CURRENT PROMPTING MESSAGE.

    A SEPARATE ENTRY OF -L WILL SWITCH TO LONG PROMPTING UNTIL
    END OF PROGRAM OR -S.

    A SEPARATE ENTRY OF -S WILL SWITCH TO SHORT PROMPTING
    UNTIL END OF PROGRAM OR -L.

    A SEPARATE ENTRY OF -ON WILL TURN REPRINT ON (PRINT WHAT
    YOU JUST ENTERED) UNTIL END OF PROGRAM OR -OFF.

    A SEPARATE ENTRY OF -OFF WILL TURN REPRINT OFF UNTIL END
    OF PROGRAM OR -ON.

    MOST MESSAGES WILL HAVE (IN PARENTHESES) THE NUMBER OF
    CHARACTERS ACCEPTED PER LINE.

    THE FOLLOWING ARE ASKED AT MOST ONCE PER EXECUTION:
        *DECK
        UNDERLINE
        REPRINT   - MAY BE CHANGED DYNAMICALLY
        PROMPT   - MAY BE CHANGED DYNAMICALLY
    THESE 4 MAY BE ENTERED AS A SINGLE PARAMETER ON THE EXECUTE
    CARD (DEFAULT- N2NS).

    THE FOLLOWING IS ASKED ONCE PER DOCUMENT:
        MAIN/SUBROUTINE/FUNCTION/PROCEDURE/END

    THE REST DEPEND UPON THE RESPONSE TO M/MC/S/F/P/E AND ARE
    SUMMARIZED IN THE TABLE ON PAGE 3:

	FORTRAN	COBOL	OTHER	COVER	FORTRAN	COBOL	OTHER	PROCED
NAME	X	X	X	X	X	X	X	X
PURPOSE	X	X	X	X	X	X	X	X
FUNC CATEGORIES	X	X	X	X	X	X	X	X
LANGUAGE	X	X	X					
PROCED LOCATION								X
REMARKS	X	X	X		X	X	X	
USAGE					X	X	X	
BEGIN STATEMENT								X
# ARGS					X	X	X	X
DESCRIPTION					X	X	X	X
DEFAULT BEGIN								X
MAX FL								X
REMARKS								X
CM REQUIRED					X	X	X	
BATCH CTL CDS	X	X	X					
TTY CTL CRDS	X	X	X					
EXECUTE CARD	X	X	X	X				
DEFAULT EXEC CD	X	X	X	X				
DEFAULT PL	X							
LOAD FL	X	X	X					
RUN FL	X	X	X					
REDUCTION	X	X	X					
# DATA CARDS	X	X	X		X	X	X	X
SUB-HEADING	X	X	X		X	X	X	X
DESCRIPTION	X	X	X		X	X	X	X
MORE SUB-HEAD	X	X	X		X	X	X	X
ERRORS	X	X	X					X
I/O UNITS	X	X	X		X	X	X	
DESCRIPTION	X	X	X		X	X	X	
# EXAMPLES	X	X	X		X	X	X	X
EXAMPLE(S)	X	X	X		X	X	X	X
METHOD	X	X	X		X	X	X	
SUBPROGRAMS								
PART OF LANG	X	X	X		X	X	X	
PART OF PROG	X		X		X		X	
OTHERS	X	X	X		X	X	X	
ARITH STMT FCNS	X				X			
# AUTHORS	X	X	X		X	X	X	X
AUTHOR(S)	X	X	X		X	X	X	X
DATE WRITTEN	X	X	X		X	X	X	X
DATES REVISED	X	X	X		X	X	X	X
SOURCE LOCATION	X	X	X		X	X	X	
OBJECT LOCATION	X	X	X		X	X	X	
ANY MORE?	X	X	X		X	X	X	X

THE FOLLOWING FOUR ITEMS ARE REQUESTED AT MOST ONCE PER EXECUTION:

*DECK A RESPONSE OF 'Y' WILL CAUSE AN UPDATE *DECK CARD TO BE GENERATED BEFORE EACH DOCUMENT CREATED DURING THIS EXECUTION.

ANY OTHER RESPONSE WILL NOT GENERATE *DECK CARDS.

IF THE DOCUMENTS GENERATED ARE TO BE PROCESSED BY CATALOGUED PROCEDURES 'DOCADD' OR 'DOCREPL', RESPOND 'N'.

UNDERLINE SOME SECTIONS WILL HAVE SUB-HEADINGS WHICH WILL BE UNDERLINED. THERE ARE TWO POSSIBLE UNDERLINE CHARACTERS.

ENTER 1 FOR UNDERSCORE (_), WHICH WILL BE PRINTED ON THE SAME LINE AS THE SUB-HEADING (CARRIAGE CONTROL: +). (SEE PAGE 11 FOR A SAMPLE.)

ENTER 2 FOR HYPHEN (-), WHICH WILL BE PRINTED ON THE LINE AFTER THE SUB-HEADING (CARRIAGE CONTROL: SPACE). (SEE PAGE 8 FOR A SAMPLE.)

REPRINT A RESPONSE OF 'Y' WILL CAUSE EACH OF THE ENTRIES TO BE TYPED BACK.   THERE IS LIMITED PROVISION FOR CORRECTION IN MULTIPLE LINE ENTRIES.

ANY OTHER RESPONSE WILL CAUSE NO REPRINT.

TO TURN REPRINT ON AT ANY TIME DURING DOCUMENT GENERATION, USE A SEPARATE ENTRY OF '-ON'; TO TURN REPRINT OFF, ENTER '-OFF'.

PROMPT THERE ARE TWO VERSIONS OF EACH PROMPTING MESSAGE.
ENTER L TO RECEIVE THE LONG FORM.
ENTER S TO RECEIVE THE SHORT FORM.

TO SWITCH TO LONG FORM AT ANY TIME DURING DOCUMENT GENERATION, USE A SEPARATE ENTRY OF '-L'; TO SWITCH TO SHORT FORM, ENTER '-S'.

THESE QUESTIONS MAY BE ANSWERED ON THE EXECUTE CARD TO SAVE TIME.

THE FOLLOWING ITEM IS REQUESTED ONCE PER DOCUMENT:

MAIN/COVER/SUBROUTINE/FUNCTION/PROCEDURE/END
 THE RESPONSE TO THIS DETERMINES WHICH OF THE REMAINING QUESTIONS WILL BE ASKED.

ENTER M TO DOCUMENT A MAIN PROGRAM.
ENTER MC TO CREATE A MAIN PROGRAM COVER SHEET.
ENTER S TO DOCUMENT A SUBROUTINE.
ENTER F TO DOCUMENT A FUNCTION.
ENTER SF TO DOCUMENT A SUBPROGRAM WHICH MAY BE USED AS A SUBROUTINE OR FUNCTION.   TWO HEADINGS WILL BE GENERATED.
ENTER FS FOR THE SAME AS SF BUT WITH THE FUNCTION HEADING FIRST.
ENTER P TO DOCUMENT A CATALOGUED PROCEDURE.
ENTER E TO END THE PROGRAM.

```
        THE REMAINING QUESTIONS DEPEND UPON THE RESPONSE TO THE LAST
QUESTION.  THE FOLLOWING ABBREVIATIONS WILL BE USED:
        M    - MAIN PROGRAM, ANY LANGUAGE
        MC   - MAIN PROGRAM COVER SHEET
        M(F) - MAIN PROGRAM, FORTRAN
        M(C) - MAIN PROGRAM, COBOL
        M(O) - MAIN PROGRAM, NOT FORTRAN OR COBOL
        SF   - SUBROUTINE OR FUNCTION, ANY LANGUAGE
        SF(F) - SUBROUTINE OR FUNCTION, FORTRAN
        SF(C) - SUBROUTINE OR FUNCTION, COBOL
        SF(O) - SUBROUTINE OR FUNCTION, NOT FORTRAN OR COBOL
        P    - CATALOGUED PROCEDURE
```

NAME   1-7 CHARACTER PROGRAM OR SUBPROGRAM NAME   -OR-
                1-10 CHARACTER PROCEDURE NAME.   (M,MC,SF,P)
                NOTE: WHILE PROCEDURE NAMES MAY BE 10 CHARACTERS. UPDATE
                      IS LIMITED TO 9-CHARACTER DECK NAMES AND PROCEDURES
                      FOR MAINTAINING DOCUMENT FILES ARE LIMITED TO
                      7-CHARACTER DECK NAMES.

PURPOSE   ANY NUMBER OF 1- TO 60-CHARACTER LINES DESCRIBING THE
                PURPOSE OF THE ROUTINE. END WITH A SEPARATE ENTRY OF :
                OR =.   (M,MC,SF,P)

FUNCTIONAL CATEGORIES
                SPECIFY 1-10 2-CHARACTER FUNCTIONAL CATEGORIES TO WHICH
                THIS ROUTINE BELONGS. A LIST OF CATEGORIES MAY BE
                OBTAINED BY EXECUTING THE FOLLOWING COMMAND:
                   BEGIN,UTILITY,,PROGDOC,OTHER,,FUNCAT.
                THE LIST IS 3 PAGES LONG.
                (3-CHARACTER CATEGORIES WILL BE SUPPORTED IN V2.5)
                (M,MC,SF,P)

LANGUAGE   1-50 CHARACTERS NAMING OR DESCRIBING THE LANGUAGE THE
                ROUTINE IS WRITTEN IN.   (M,SF)
                THE FOLLOWING ABBREVIATIONS ARE RECOGNIZED:
                   A   - ALGOL
                   B   - BASIC
                   C   - COBOL   (ALSO COB)
                   C4   - COBOL 4
                   C5   - COBOL 5
                   COM   - CDC 6000 CP COMPASS
                   F   - FORTRAN
                   F4   - FORTRAN IV
                   FTN   - FORTRAN IV EXTENDED
                   F5   - FORTRAN 77
                   FTN5   - FORTRAN 77 EXTENDED
                   MNF   - MINNESOTA FORTRAN
                   P   - PL/I   (ALSO PLI, PL1, PL/1)
                   RATFOR - RATIONAL FORTRAN   (ALSO RF)
                   S   - SNOBOL

PROCEDURE LOCATION
                SPECIFY THE LOCATION OF THE CATALOGUED PROCEDURE BEING
                DOCUMENTED (PROGRAM AND SUBPROGRAM LOCATIONS ARE REQUESTED
                LATER). GIVE EITHER THE PERMANENT FILE NAME AND ID OR A
                SAMPLE ATTACH. USE ANY NUMBER OF 1- TO 60-CHARACTER
                LINES.

REMARKS   ENTER ANY REMARKS ABOUT THE (SUB)PROGRAM. USE ANY NUMBER
                 OF 1- TO 60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF
                 : OR =.   (M.SF)
                 (REMARKS FOR MAIN PROGRAM COVER SHEET ARE GENERATED
                 AUTOMATICALLY)
                 (REMARKS FOR PROCEDURES ARE REQUESTED LATER.)

USAGE   ENTER CALL STATEMENT(S) OR FUNCTION USAGE WITH ALL
                 ARGUMENTS SHOWN. GIVE ALL POSSIBLE WAYS THE SUBPROGRAM
                 CAN BE USED. USE ANY NUMBER OF 1- TO 60-CHARACTER LINES.
                 END WITH A SEPARATE ENTRY OF : OR =. DO NOT DESCRIBE THE
                 ARGUMENTS HERE. THE NEXT PROMPTING WILL BE FOR ARGUMENT
                 DESCRIPTION. (SF)

BEGIN STATEMENT
                 ENTER THE BEGIN STATEMENT SHOWING ALL PARAMETERS. TRY TO
                 USE THE NAMES IN THE PROCEDURE HEADER, IF POSSIBLE. USE
                 ANY NUMBER OF 1- TO 60-CHARACTER LINES. END WITH A
                 SEPARATE ENTRY OF : OR =. DO NOT DESCRIBE THE PARAMETERS
                 HERE. THE NEXT PROMPTING WILL BE FOR PARAMETER
                 DESCRIPTION. (P)

NUMBER OF ARGUMENTS/PARAMETERS
                 ENTER   0   IF THE ROUTINE HAS NO PARAMETERS.
                 ENTER   1   IF THE ROUTINE HAS 1 PARAMETERS.
                 ENTER   2   IF THE ROUTINE HAS 2 OR MORE PARAMETERS.
                 (SF,P)

DESCRIPTION OF ARGUMENTS/PARAMETERS
                 REQUESTED ONLY IF RESPONSE TO LAST QUESTION WAS 1 OR 2.
                 DESCRIBE THE ARGUMENT(S) OF THE CALL OR FUNCTION USAGE OR
                 BEGIN STATEMENT PARAMETERS. USE ANY NUMBER OF 1- TO 60-
                 CHARACTER LINES. END WITH A SEPARATE ENTRY OF : OR =.
                 (SF,P)

DEFAULT BEGIN
                 ENTER THE BEGIN STATEMENT SHOWING ALL DEFAULT VALUES. USE
                 ANY NUMBER OF 1- TO 60-CHARACTER LINES. END WITH A
                 SEPARATE ENTRY OF : OR =. (P)

MAX FL   FIELD LENGTH REQUIRED FOR THE LARGEST PROGRAM EXECUTED IN
                 THE PROCEDURE. (P)
                 (FL FOR PROGRAMS AND SUBPROGRAMS IS REQUESTED LATER.)

REMARKS   ENTER ANY REMARKS ABOUT THE PROCEDURE. USE ANY NUMBER OF
                 1- TO 60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF :
                 OR =.   (P)
                 (REMARKS FOR (SUB)PROGRAMS ARE REQUESTED EARLIER.)

CM REQUIRED   ENTER THE CORE REQUIRED FOR THIS SUBPROGRAM (1-40
                 CHARACTERS). THIS MAY BE OBTAINED FROM THE COMPILATION
                 LISTING.   (SF)

BATCH CONTROL CARDS
    LIST THE CONTROL CARDS AND SHOW THE POSITIONING OF ANY
    DATA CARDS. DON'T SHOW JOB OR CHARGE CARDS UNLESS THE JOB
    CARD HAS SOME SPECIAL REQUIRED PARAMETERS (MT, NT, PK, T,
    BUT NOT CM). USE ANY NUMBER OF 1- TO 57-CHARACTER LINES.

    IF THE PROGRAM IS NOT DESIGNED FOR BATCH USE, THIS MESSAGE
    (SEE PAGE 2) CAN BE GENERATED AUTOMATICALLY WITH A SINGLE
    ENTRY OF 0 (ZERO).

    IN EITHER CASE, END WITH A SEPARATE ENTRY OF : OR =.   (M)

TTY CONTROL CARDS
    LIST THE CONTROL CARDS AND SHOW THE POSITIONING OF ANY TTY
    DATA ENTRIES (SEE PAGE 2). USE ANY NUMBER OF 1- TO 57-
    CHARACTER LINES.

    IF THE PROGRAM IS NOT DESIGNED FOR TTY USE, THIS MESSAGE
    CAN BE GENERATED AUTOMATICALLY WITH A SINGLE ENTRY OF 0
    (ZERO).

    IN EITHER CASE, END WITH A SEPARATE ENTRY OF : OR =.   (M)

EXECUTE CARD GIVE THE EXECUTE CARD SHOWING ANY PARAMETERS. THEN LIST
    AND DESCRIBE EACH PARAMETER (SUGGEST STARTING THE
    DESCRIPTIONS WITH 3 SPACES (SEE PAGE 2)). USE ANY NUMBER
    OF 1- TO 57-CHARACTER LINES. END WITH A SEPARATE ENTRY OF
    : OR =. (M,MC)

DEFAULT EXECUTE CARD
    GIVE THE EXECUTE CARD SHOWING ALL DEFAULT VALUES. USE ANY
    NUMBER OF 1- TO 57-CHARACTER LINES. END WITH A SEPARATE
    ENTRY OF : OR =. (M,MC)

DEFAULT PL   ENTER PRINT LIMIT (PL) AS SPECIFIED ON FTN CONTROL CARD.
    IF NOT SPECIFIED, ENTER SPACE, 0, : OR =. (M(F))

LOAD FL   ENTER THE FIELD LENGTH NEEDED TO LOAD THE PROGRAM (1-40
    CHARACTERS).   (M)

RUN FL   ENTER THE FIELD LENGTH NEEDED TO RUN THE PROGRAM (1-40
    CHARACTERS).   (M)

REDUCTION   ENTER SPACE, : OR = IF THE PROGRAM DOES NOT SPECIFICALLY
                            ADJUST CORE BUT USES THE CORE
                            DETERMINED BY THE LOADER.
    ENTER 0 IF THE PROGRAM SPECIFICALLY REDUCES TO THE MINIMUM
            NEEDED TO RUN.
    ENTER 1 IF THE PROGRAM SPECIFICALLY ADJUSTS CORE UP AND/OR
            DOWN AS PROGRAM REQUIREMENTS CHANGE.
    IF THE PROGRAM REQUESTS A SPECIFIC AMOUNT OF CORE, ENTER
            THAT AMOUNT.   (M)

NUMBER OF DATA CARDS
    ENTER 0 IF NO DATA CARDS.
    ENTER 1 FOR THE HEADING 'DATA CARD'.
    ENTER 2 FOR THE HEADING 'DATA CARDS'.
    (M,SF,P)

DATA CARD SUB-HEADING
         ENTER 0   IF NO SUB-HEADING IS DESIRED.
         ENTER 1   FOR THE SUB-HEADING 'COL   CONTENTS'.
         ENTER 2   FOR THE SUB-HEADING 'CARD   COL   CONTENTS'.
         (M,SF,P)

DATA CARD DESCRIPTION
         DESCRIBE THE DATA CARDS. USE ANY NUMBER OF 1- TO 60-
         CHARACTER LINES (IF NO SUB-HEADING) OR 1- TO 57-CHARACTER
         LINES (IF SUB-HEADING). END WITH A SEPARATE ENTRY OF : OR
         =.   (M,SF,P)

DO YOU WANT ANOTHER SUB-HEADING?
         ASKED ONLY IF SUB-HEADINGS WERE SPECIFIED.
         ENTER Y   FOR ANOTHER SUB-HEADING.
         ENTER N   TO CONTINUE THE DOCUMENT.

ERROR MESSAGES
         LIST ERROR MESSAGES THE PROGRAM CAN PRODUCE WITH AN
         EXPLANATION OF EACH (SUGGEST STARTING EXPLANATION WITH 3
         SPACES (SEE PAGE 10)). USE ANY NUMBER OF 1- TO
         60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF : OR =.
         IF NO ENTRIES ARE GIVEN, THE SECTION WILL NOT APPEAR IN
         THE GENERATED DOCUMENT. (M,P)

INPUT/OUTPUT UNITS
         ENTER SPACE. : OR = IF NO I/O UNITS.
         ENTER I   FOR THE HEADING 'INPUT UNITS'.
         ENTER O   FOR THE HEADING 'OUTPUT UNITS'.
         ENTER IO FOR THE HEADING 'INPUT/OUTPUT UNITS'.
         ENTER I/O FOR 2 HEADINGS: 'INPUT UNITS' AND 'OUTPUT UNITS'
                                   (EACH WILL BE PROMPTED FOR
         (M,SF)   SEPARATELY.)

DESCRIPTION OF I/O UNITS
         REQUESTED ONLY IF THE RESPONSE TO THE LAST QUESTION WAS I,
         O, IO OR I/O. SUB-HEADINGS ARE TYPED TO AID IN FORMATTING
         DESCRIPTIONS.

         FOR FORTRAN, 3 COLUMNS ARE USED: FORTRAN LOGICAL UNIT
         NUMBER, LOCAL FILE NAME AND USE. FOR EXAMPLE, FOR THE
         PROGRAM STATEMENT:
            PROGRAM ANY (INPUT, TAPE7, OUTPUT, TAPE5=INPUT)

UNIT #	LFN	USE
5	INPUT	DATA CARD INPUT
	OUTPUT	LISTABLE OUTPUT
7	TAPE7	WORK FILE

         LIST FILES IN ALPHABETICAL ORDER BY LFN. BE SURE TO
         INCLUDE ALL RECORD MANAGER FILES WHICH ARE NOT ALSO IN THE
         PROGRAM STATEMENT.

         FOR NON-FORTRAN, ONLY THE LAST 2 COLUMNS ARE USED.
         (M,SF)

NUMBER OF EXAMPLES
        ENTER   0 IF NO EXAMPLES.
        ENTER   1 IF 1 EXAMPLE (HEADING WILL BE 'EXAMPLE').
        ENTER   2 IF 2 OR MORE EXAMPLES (HEADING WILL BE
                  'EXAMPLES').
        (M,SF,P)

EXAMPLES   GIVE THE EXAMPLE(S). USE ANY NUMBER OF 1- TO 60-CHARACTER
             LINES. END WITH A SEPARATE ENTRY OF : OR =.   (M,SF,P)

METHOD   IF DESIRED, DESCRIBE THE METHOD USED. IF APPROPRIATE,
             CITE REFERENCES. USE ANY NUMBER OF 1- TO 60-CHARACTER
             LINES. END WITH A SEPARATE ENTRY OF : OR =. IF NO
             DESCRIPTION IS GIVEN, THE SECTION WILL NOT APPEAR IN THE
             GENERATED DOCUMENT. (M,SF)

SUBPROGRAMS REQUIRED (PART OF LANGUAGE)
             LIST ALL SUBROUTINES AND FUNCTIONS USED BY THIS ROUTINE
             WHICH ARE A PART OF THE LANGUAGE (SUCH AS SIN, COS, EOF,
             BUFFEROUT, CONNEC, ETC.). USE ANY NUMBER OF 1- TO 57-
             CHARACTER LINES. FIVE NAMES WILL FIT ON A LINE IN 10-
             CHARACTER FIELDS. THEY SHOULD BE LISTED ALPHABETICALLY OR
             GROUPED ACCORDING TO TYPE (EG. LOGICAL FUNCTIONS, TRIG
             FUNCTIONS, NON-STANDARD I/O ROUTINES, ETC.). END WITH A
             SEPARATE ENTRY OF : OR =. (M,SF)

SUBPROGRAMS REQUIRED (PART OF PROGRAM)
             LIST AND DESCRIBE ALL SUBROUTINES AND FUNCTIONS WHICH WERE
             WRITTEN SPECIFICALLY FOR THIS PROGRAM OR SUBPROGRAM. USE
             ANY NUMBER OF 1- TO 57-CHARACTER LINES. END WITH A
             SEPARATE ENTRY OF : OR =. (M(F),M(O),SF(F),SF(O))

SUBPROGRAMS REQUIRED (OTHERS)
             LIST ALL SUBPROGRAMS USED (SUCH AS THOSE IN USER LIBRARIES
             OR OTHER FILES) WHICH ARE NOT LISTED ABOVE. USE ANY
             NUMBER OF 1- TO 57-CHARACTER LINES. END WITH A SEPARATE
             ENTRY OF : OR =.   (M,SF)

ARITHMETIC STATEMENT FUNCTIONS
             LIST AND DESCRIBE ALL ARITHMETIC STATEMENT FUNCTIONS USED.
             USE ANY NUMBER OF 1- TO 60-CHARACTER LINES. END WITH A
             SEPARATE ENTRY OF : OR =. (M(F),SF(F))

NUMBER OF AUTHORS
        ENTER   1 IF 1 AUTHOR (HEADING WILL BE 'AUTHOR').
        ENTER   2 IF 2 OR MORE AUTHORS (HEADING WILL BE 'AUTHORS')
        (M,SF,P)

AUTHORS   LIST ALL AUTHORS WITH COMPANY AND/OR CODE. USE ANY NUMBER
             OF 1- TO 60-CHARACTER LINES. END WITH A SEPARATE ENTRY OF
             : OR =. (M,SF,P)

DATE WRITTEN ENTER THE DATE WRITTEN (1-50 CHARACTERS).   (M,SF,P)

DATES REVISED
          ENTER THE DATES REVISED, WITH PERHAPS A DESCRIPTION OF THE
          REVISION, PROGRAM REVISION NUMBER, ETC.   USE ANY NUMBER OF
          1- TO 60-CHARACTER LINES.   END WITH A SEPARATE ENTRY OF :
          OR =.   (M,SF,P)

SOURCE DECK LOCATION
          LIST ALL PLACES THE SOURCE PROGRAM IS LOCATED.   USE ANY
          NUMBER OF 1- TO 57-CHARACTER LINES.   END WITH A SEPARATE
          ENTRY OF : OR =.   (M,SF)

OBJECT DECK LOCATION
          LIST ALL PLACES THE OBJECT PROGRAM IS LOCATED.   USE ANY
          NUMBER OF 1- TO 57-CHARACTER LINES.   END WITH A SEPARATE
          ENTRY OF : OR =.   (M,SF)

DO YOU WANT TO DOCUMENT ANOTHER ROUTINE?
          ENTER   Y   TO DOCUMENT ANOTHER ROUTINE.
          ENTER   N   TO END THE PROGRAM.
          IT IS SUGGESTED THAT ONLY ONE DOCUMENT BE GENERATED AT A
          TIME.
          (M,SF,P)

ERROR MESSAGES
    DOCUMENT TERMINATED - DOCNAME
        TTY MESSAGE WHEN USER ENTERS @ TO TERMINATE THE CURRENT
        DOCUMENT

    IGNORED - NO PREVIOUS LINE TO DELETE
        USER ENTERED '-' IN MULTIPLE LINE SECTION THAT IS
        CURRENTLY EMPTY (REPRINT MODE ONLY)

    LAST LINE DELETED
        USER ENTERED '-' IN MULTIPLE LINE SECTION (REPRINT MODE
        ONLY)

    SORRY. I MUST HAVE A PROCEDURE NAME BEFORE I CAN CONTINUE.
        SELF-EXPLANATORY

    SORRY. I MUST HAVE A ROUTINE NAME BEFORE I CAN CONTINUE.
        SELF-EXPLANATORY.

    *****   THIS DOCUMENT TERMINATED EARLY   *****
        PUT INTO DOCUMENT WHEN USER ENTERS @ TO TERMINATE THE
        CURRENT DOCUMENT
    ... TRUNCATED
        END OF A TOO-LONG ENTRY DROPPED. IF IN A MULTIPLE LINE
        SECTION, USER MAY ENTER '-' AND RETYPE THE LINE OR WAIT
        AND CORRECT IT LATER IN EDITOR.

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
4	DOCMNT	CREATED DOCUMENTS (ON PF SPACE)
	OUTPUT	FTN ERROR MESSAGES
5	TTY	TERMINAL INPUT/OUTPUT

METHOD
    TTY IS PROMPTED FOR EACH SECTION OF THE DOCUMENT.

    THE SECTIONS REQUESTED ARE DETERMINED BY THE SOURCE
    LANGUAGE AND TYPE OF ROUTINE.

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      AND        CONNEC     DATE       EOF        IABS
      MOVLEV     RECOVR     REMARK     SHIFT
   PART OF PROGRAM
      AACOVER  - DRIVER FOR MAIN PROGRAM COVER SHEET
      AAPROC   - DRIVER FOR PROCEDURES
      AAPROG   - DRIVER FOR (SUB)PROGRAMS
      ANYMOR   - ASK IF ANY MORE DOCUMENTS TO BE CREATED
      ARITH    - ASK FOR ARITHMETIC STATEMENT FUNCTIONS
      AUTHOR   - ASK FOR AUTHORS
      CATGORY  - ASK FOR FUNCTIONAL CATEGORY(IES)
      CATPRO   - GET PROCEDURE NAME
      DATA     - ASK FOR DATA CARD DESCRIPTION
      DECK1    - ASK IF *DECK CARDS DESIRED
      DEFPL    - ASK FOR DEFAULT PL
      DOCIT    - EXTEND MAIN PROGRAM COVER SHEET TO 60 LINES
      ECHO1    - ASK IF ECHO DESIRED
      ENDIT    - CLOSE PROGRAM AND PRINT SUMMARY
      EOJ      - ABNORMAL TERMINATION ROUTINE
      ERRORS   - ASK FOR ERROR MESSAGES
      EXAM     - ASK FOR PROCEDURE EXAMPLES
      EXEC     - ASK FOR EXECUTION INSTRUCTIONS
      EXEC1    - ASK FOR CM REQUIRED FOR SUBPROGRAM
                 (ENTRY IN EXEC)
      EXEC2    - ASK FOR PROCEDURE MAX FL
                 (ENTRY IN EXEC)
      FASTOPT  - PROCESS EXECUTE CARD OPTION
      GET13    - GET VARIABLE LENGTH INFO AND PRINT IN COL 13
      GET16    - GET VARIABLE LENGTH INFO AND PRINT IN COL 16
                 (ENTRY IN GET13)
      IIOO     - ASK FOR INPUT/OUTPUT DESCRIPTION
      LANG1    - ASK FOR SOURCE LANGUAGE
      LOC      - ASK FOR PROCEDURE LOCATION
      METH     - ASK FOR METHOD DESCRIPTION
      OBJ      - ASK FOR LOCATION OF SOURCE/OBJECT DECKS
      ONOFFSL  - DYNAMIC REPRINT ON/OFF, SHORT/LONG PROMPT
      PARAM    - ASK FOR SUBPROGRAM PARAMETERS
      PRMPT    - ASK IF LONG/SHORT PROMPTING DESIRED
      PRODEF   - ASK FOR DEFAULT BEGIN STATEMENT
      PROG     - ASK FOR ROUTINE NAME
      PURP     - ASK FOR PURPOSE
      REM      - ASK FOR REMARKS
      SUBS     - ASK FOR SUBPROGRAMS REQUIRED
      TRUNC    - PRINT TRUNCATED MESSAGE
      UNDER1   - ASK WHICH UNDERLINE CHARACTER DESIRED
      USAGE    - ASK FOR SUBPROGRAM USAGE INFO
      WRIT     - ASK FOR DATES WRITTEN AND REVISED
   OTHERS
      ADJL     - SQUEEZE LEFT (SPACE BETWEEN WORDS)
      ELTIME   - ELAPSED TIME COMPUTATIONS
      FINDWRD  - SEARCH ARRAY FOR WORD
      FSETFIT  - SET FTN FIT
      GETLFNS  - GET ACTUAL LOCAL FILE NAMES
      PAKLFT   - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
      REQUEST  - REQUEST,DOCMNT,*PF.
      ZBLANK   - CHANGE BLANKS TO 00B
```

ARITHMETIC STATEMENT FUNCTIONS
    I11FMT   - FAST I-FORMAT DECODE
    L61FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L81FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/03/73

DATE(S) REVISED
    11/19/73 - V1.1
    03/24/75 - V1.2
    12/01/75 - V1.3
    03/17/76 - V1.4
    03/31/76 - V1.5
    05/07/76 - V1.6 - CHANGE CONTROL CHARACTER BACK SLASH TO @
                      (BECAUSE COM UNIT WON'T PRINT BACK SLASH)
    08/30/76 - V2.0 - CHANGE ORDER OF DOCUMENT.
                      SHORTEN PROCESSING OF 'DATA CARD' SECTION.
    10/20/76 - V2.1 - FIX SOME PROMPTING MESSAGES. MOVE PROMPT
                      FOR LANGUAGE TO ITS POSITION IN THE
                      DOCUMENT (AFTER FUNCTIONAL CATEGORIES).
                      TO AVOID CONFUSION WITH ECHO/NON-ECHO MODE
                      OF A TELETYPE, THE WORD 'ECHO' IS CHANGED
                      TO 'REPRINT' IN THIS PROGRAM. ALLOW
                      REPRINT TO BE TURNED ON/OFF DYNAMICALLY.
                      ALLOW LONG/SHORT PROMPTING TO BE CHANGED
                      DYNAMICALLY. ADD SEVERAL LANGUAGE
                      ABBREVIATIONS.
    02/14/77 - V2.2 - ADD DEFAULT PL FOR FORTRAN MAIN PROGRAMS.
                      ADD SECTION OF ERROR MESSAGES FOR MAIN
                      PROGRAMS AND PROCEDURES.
    04/20/77 - V2.3 - ADD MORE DEFAULTS FOR LANGUAGE.
                      REMOVE ONE OF TTY PROMPTER FILES
                      (PROGRAM LEAVES FILE 'TTY' CONNECTED).
                      CORRECT @ PROCESSING IN 2 PLACES.
    08/09/77 - V2.4 - EXPAND EXECUTE CARD OPTION PARAMETER.
                      ADD MAIN PROGRAM COVER SHEET.

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

```
PROGRAM 'DOCDAT'

PURPOSE
    LIST DOCUMENT NAMES, DATES AND PAGE NUMBERS

FUNCTIONAL CATEGORIES:  Q6  S0

LANGUAGE: FORTRAN IV EXTENDED

COMPUTER
    CDC 6000

REMARKS
    ASSUMES THE DOCUMENTS HAVE THE FORM:
        *DECK <DOCNAME>
        . . .
        MM/DD/YY                    . . .         <NAME> NN OF NN

EXECUTION
    FROM BATCH AND TTY
        BEGIN,DOCDATE,,<LIB>,<ID>,OUTPUT,<PASSWORDS>.
          -OR-
        ATTACH,TAPE1,....      << DOCUMENTATION FILE
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.       -OR-      LIBRARY,UTILITY.
        DOCDAT.

    FROM TTY
        BEGIN,DOCDATE,,<LIB>,<ID>,OUTPUT,<PASSWORDS>.
          -OR-
        ATTACH,TAPE1,....      << DOCUMENTATION FILE
        BEGIN,ANYLIB,,UTILITY,,DOCDAT,,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        DOCDAT,INFILE,OUTPUT.
            INFILE  - INPUT DOCUMENT FILE
            OUTPUT  - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        DOCDATE,TAPE1,OUTPUT.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 17000B

ERROR MESSAGES
    INPUT FILE EMPTY
        SELF-EXPLANATORY

INPUT/OUTPUT UNITS
    UNIT  #     LFN                         USE
    -------    -------    --------------------------------------------
               TAPE1      INPUT DOCUMENT FILE
               OUTPUT     LISTABLE OUTPUT
```

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   DATE   FILESQ   GET
        IFETCH   OPENM   TIME
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        MOVECM - MOVE ARRAY
        MOVSTR - MOVE CHARACTER STRING

ARITHMETIC STATEMENT FUNCTIONS
    L51FMT - FAST L-FORMAT DECODE (LEFT-ADJ. ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 1977 OR 1978

DATE(S) REVISED
    02/05/80 - REDO OUTPUT FORMAT

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'DOCIT'

PURPOSE
  ADD PAGING TO ONE OR MORE DOCUMENTS

FUNCTIONAL CATEGORIES: Q6

LANGUAGE: FORTRAN IV EXTENDED

COMPUTER
  CDC 6000

REMARKS
  NORMALLY. PROGRAM 'DOC' (OR 'MTDOC') IS USED TO CREATE THE
  DOCUMENT(S). AN EDITOR IS THEN USED TO MODIFY IT/THEM AND
  INDICATE THE START OF EACH PAGE. PROGRAM 'LINER' MAY BE
  USED TO CHECK PAGE LENGTHS. FINALLY. 'DOCIT' WILL INCREASE
  EACH PAGE TO 60 OR 80 LINES (FOR 6 OR 8 LINES PER INCH.
  RESPECTIVELY) AND ADD THE DATE. DOCUMENT NAME AND PAGE
  NUMBER AT THE BOTTOM OF EACH PAGE.

  DOCUMENT LINES HAVE THE FOLLOWING FORMAT:
      COL   CONTENTS
      -----   --------
       1   CARRIAGE CONTROL (' 1', ' ', '0', '-', '+', 'Q',
               'R', 'S', 'T', 'V', 'VC')
               THE FOLLOWING SPECIAL CARRIAGE CONTROL CHARACTERS
               ARE RECOGNIZED:
                   Q - LINE COPIED
                   R - LINE COPIED
                   S - LINE COPIED AND LINES PER PAGE SET TO 60
                   T - LINE COPIED AND LINES PER PAGE SET TO 80
                   V - LINE COPIED
                   VC - THIS LINE AND NEXT LINE COPIED
               THESE CHARACTERS DO NOT ALTER THE LINE COUNT.
      2-80   LINE TO BE PRINTED

  THE LAST LINE OF EACH PAGE (PRODUCED BY DOCIT) WILL BE
  CREATED BY DOCIT IN THE FOLLOWING FORMAT:
      COL   CONTENTS
      -----   --------
       1   CARRIAGE CONTROL (' ', '0')
      2-9   DATE (MM/DD/YY)
      55-61   DOCUMENT NAME
       63   '-'
      65-66   PAGE NUMBER
      68-69   'OF'
      71-72   TOTAL NUMBER OF PAGES

  THE DOCUMENT NAME IS TAKEN FROM LINES HAVING '1' IN COLUMN 1
  AND THE FOLLOWING CHARACTER STRINGS STARTING IN COLUMN 10:
      FUNCTION '<NAME>'
      LIBRARY '<NAME>'
      PACKAGE '<NAME>'
      PROCEDURE '<NAME>'
      PROGRAM '<NAME>'
      SUBROUTINE '<NAME>'
      TAPE '<TAPENO>'

WHERE <NAME> IS 1-7 CHARACTERS; <TAPENO> IS 1-6 CHARACTERS.

IF THE FIRST LINE OF A DOCUMENT DOES NOT HAVE ONE OF THE
ABOVE CHARACTER STRINGS, THE DOCUMENT NAME IS TAKEN FROM THE
5TH PARAMETER ON THE EXECUTE CARD.

IF THE FIRST CARD OF THE INPUT FILE HAS '*DECK ' IN COL 1-6,
MULTIPLE-DOCUMENT PROCESSING IS INITIATED. IN THIS MODE,
THE DOCUMENT NAMES ARE TAKEN FROM THE *DECK CARDS AND DOCIT
WILL COUNT THE PAGES IN EACH DOCUMENT. EXECUTE CARD
PARAMETERS MAXPAGE AND NAME ARE IGNORED. NOTE THAT AN EMPTY
DOCUMENT (2 *DECK CARDS TOGETHER OR A *DECK AT THE END) WILL
CAUSE UNPREDICTED RESULTS.

EACH DOCUMENT IS ASSUMED TO BE 6 LINES PER INCH. DOCUMENTS
WHICH ARE 8 LPI ARE RESET TO 6 LPI AFTER THE DOCUMENT AND
BEFORE THE NEXT DOCUMENT, IF ANY.

BOTH THE INPUT AND OUTPUT FILES ARE REWOUND BEFORE AND
AFTER USE.

```
EXECUTION
    FROM BATCH
        NOT DESIGNED FOR BATCH USE

    FROM TTY
        CONNECT,OUTPUT
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        DOC.
           (CREATE DOCUMENT ON FILE 'DOCMNT')
        EDITOR
        EDIT.DOCMNT,S
           (MODIFY, IF NECESSARY.  INDICATE START OF EACH PAGE BY
            PUTTING A '1' IN COLUMN 1 OF EACH LINE WHICH IS TO BE
            THE FIRST LINE OF A PAGE.)
        SAVE,NEWDOC,N
              (INSTEAD OF THE EDITOR/EDIT/ ../SAVE SEQUENCE,
               ANOTHER EDITING PROGRAM MAY BE USED, SUCH AS:
                  ATTACH,NETED.
                  NETED,DOCMNT
                     (MODIFY, ETC.)
                  SAVE NEWDOC                )
        LINER,NEWDOC.
           (WILL COUNT PAGES AND NUMBER OF LINES PER PAGE.  IF
            ANY PAGE HAS MORE THAN 59 OR 79 LINES, GO BACK AND
            RESTRUCTURE.)
        BYE
        DOCIT,NEWDOC,FILE.
        (DO SOMETHING WITH 'FILE' -- PERHAPS USE PROCEDURES
         'DOCADD' OR 'DOCREPL' TO PUT IT INTO A DOCUMENT FILE)
```

```
EXECUTE CARD PARAMETERS
    DOCIT,INFILE,OUTFILE,MAXPAGE,DATE,NAME,OUTPUT.
        INFILE  - INPUT FILE  (REWOUND BEFORE AND AFTER)
        OUTFILE - OUTPUT FILE (REWOUND BEFORE AND AFTER)
        MAXPAGE - MAXIMUM NUMBER OF PAGES IN DOCUMENT (1-99)
                  (IF OMITTED, PROGRAM WILL COUNT PAGES)
                  (IGNORED IN *DECK MODE.  SEE REMARKS)
        DATE    - DATE TO BE PUT ON BOTTOM LINE OF EACH
                  DOCUMENT (MMDDYY)
                  (IF OMITTED, CURRENT DATE WILL BE USED)
        NAME    - NAME OF DOCUMENT
                  (WILL BE USED ONLY IF NAME CANNOT BE FOUND
                  ON FIRST LINE OF DOCUMENT)
                  (IGNORED IN *DECK MODE.  SEE REMARKS)
        OUTPUT  - LISTABLE OUTPUT (ERROR MESSAGES)

    DEFAULT EXECUTE CARD
        DOCIT,TAPE1,TAPE2,...,OUTPUT.

    FL NEEDED TO LOAD: 33000B
    FL NEEDED TO RUN : 23000B

ERROR MESSAGES
    ABEND
        PROGRAM TERMINATED ABNORMALLY

    ***** CARD NO. <NNN> IN DECK <NAME>  <CARD-IMAGE>
    ***** ERROR - ABOVE CARD HAS INVALID CARRIAGE CONTROL
    CHARACTER (<CC>)
        MESSAGE APPEARS ON OUTPUT FILE.  CORRECT ERROR AND
        RE-EXECUTE PROGRAM.

    <NNNNN> ERRORS - JOB TERMINATED
        <NNNNN> IS NUMBER OF INVALID CARRIAGE CONTROL CHARACTERS
        ENCOUNTERED.  CORRECT ERRORS AND RE-EXECUTE PROGRAM.

    INPUT FILE EMPTY
        INPUT FILE HAS NO INFORMATION

    INVALIC CC - TERMINATED
        AN UNRECOGNIZED CARRIAGE CONTROL CHARACTER WAS
        ENCOUNTERED AND PROGRAM TERMINATED.  ERROR IS LISTED
        ON OUTPUT FILE.  CORRECT AND RE-EXECUTE PROGRAM.

    NO PAGES ENCOUNTERED
        NO CARRIAGE CONTROL '1' FOUND WHILE COUNTING
        PAGES.  MAY OR MAY NOT BE A DOCUMENT.

INPUT/OUTPUT UNITS
    UNIT #    LFN                        USE
    -------  -------  ---------------------------------------------
             DAYFILE  ERROR MESSAGES AND MESSAGES GIVING
                      DOCUMENT NAME, DATE AND NUMBER OF PAGES
             OUTPUT   LISTABLE OUTPUT (ERROR MESSAGES)
             TAPE1    INPUT FILE
             TAPE2    OUTPUT FILE
```

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   DATE   FILESQ   GET
        IFETCH   MAXO   MINO   MOD   MOVLEV
        OR   OPENM   PUT   RECOVR   REMARK
        SHIFT
    PART OF PROGRAM
        COUNT   - COUNT PAGES (NO *DECK)
        DCOUNT   - COUNT PAGES (*DECK)
        DFMSG   - DAYFILE MESSAGES
        ENDIT   - TERMINATE PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
        INITAPE - INITIALIZE TAPES
        INITLIZ - INITIALIZE PROGRAM
        NODEK   - NO *DECK PROCESSING
        PROCESS - DOCUMENT PROCESSOR
        PROCDEK - *DECK PROCESSOR
    OTHERS
        ADJL   - SHIFT LEFT ENGLISH WORDS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTEN   - FAST I-FORMAT ENCODE
        IFMTV   - FAST VARIABLE I-FORMAT DECODE
        MOVSTR   - MOVE CHARACTER STRING
        PUTCHA   - INSERT CHARACTER INTO STRING
        REPLAC   - REPLACE ONE CHARACTER WITH ANOTHER
        REQUEST - REQUEST,TAPE2,*PF.

ARITHMETIC STATEMENT FUNCTIONS
    FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
        A66FMT   A81FMT   A88FMT   A810FMT
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L21FMT   L23FMT   L25FMT   L51FMT
        L61FMT   L77FMT   L81FMT   L91FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R11FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/04/76 (VERSION 1.0)

DATE(S) REVISED
    05/05/76 - V1.1 -
    06/21/76 - V1.2 - ADD SCAN FOR MTDOC OUTPUT AND OPTIONAL
                      NAME ON EXECUTE CARD
    08/30/76 - V1.3 - MOVE FUNCTION NAME EXTRACTION 2 COLUMNS
                      TO THE RIGHT. ACCEPT AND IGNORE (COPY)
                      *DECK CARD. ¢CHANGED IN V2.0!
    10/18/76 - V1.4 - CHANGE OUTPUT TO TAPE2 ('OUTPUT' IS FOR
                      ERROR MESSAGES).
                    - REWIND INFILE AND OUTFILE BEFORE AND
                      AFTER.
                    - LET PROGRAM COUNT PAGES.
                    - DOCUMENT NAME AND PAGE NUMBER MOVED
                      LEFT 1 COLUMN ON BOTTOM LINES.

```
06/02/77 - V1.5 - ALLOW FOR 6/8 LPI.
                - CONVERT OUTPUT FILE TO 6RM.
                - ADD DOCUMENT TYPE TO BOTTOM LINE OF
                  DOCUMENT.
01/10/78 - V2.0 - COMPLETE REWRITE:
                - CORRECT 'BLANK' PROBLEM WITH VERY SHORT
                  NAME PARAMETER ON EXECUTE CARD.
                - REMOVE DOCUMENT TYPE FROM BOTTOM LINE.
                - ADD MULTIPLE-DOCUMENT CAPABILITY
                  (SEVERAL DOCUMENTS, EACH STARTING WITH
                  *DECK).
03/01/80 - V2.1 - ADD LIBRARY AND PACKAGE TO LIST OF
                  DOCUMENT TYPES.

   LOCATION OF DECKS
      SOURCE
         UPDATE LIBRARY:    UTILITYPL,ID=CSYS
      OBJECT
         EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'DOCUMNT'

PURPOSE
    MAINTAIN A FILE OF DOCUMENTS

FUNCTIONAL CATEGORIES: Q6   S0   K1

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    EACH DOCUMENT IN A DOCUMENT FILE IS PRECEDED BY A
    CARD WITH '*DECK ' IN COLUMNS 1-6 AND A 1-7-CHARACTER
    DECK NAME IN COLUMNS 7-13.

EXECUTION
    FROM BATCH AND TTY
        ATTACH,UTILITY.
        ATTACH,OLD,....   (OLD DOCUMENT FILE)
        LIBRARY,UTILITY.
        DOCUMNT,....
        CATALOG,NEW,.....   (NEW DOCUMENT FILE)

    EXECUTE CARD PARAMETERS
        DOCUMNT,OLD,NEW,FCN,PROG,AFTER,IN,GID1,GID2,OUTPUT.
            OLD   - OLD DOCUMENT FILE
            NEW   - NEW DOCUMENT FILE
                       (ALSO OUTPUT OF G FUNCTION)
            FCN   - FUNCTION
                       A - ADD A DOCUMENT
                       D - DELETE A DOCUMENT
                       G - GET A DOCUMENT
                           (IF NEW OMITTED, NEW=PROG)
                       R - REPLACE A DOCUMENT
                           (IF PROG NOT FOUND, FCN CHANGED TO A)
            PROG   - DOCUMENT NAME
            AFTER   - FOR ADD FUNCTION, LOCATION OF NEW
                       DOCUMENT IN DOCUMENT FILE
                       OMITTED - PROG IS ADDED ALPHABETICALLY
                       0   - PROG IS ADDED AT START OF FILE
                       END   - PROG IS ADDED AT END OF FILE
                       OTHER   - PROG IS ADDED AFTER THIS DOCUMENT
            IN   - INPUT FILE FOR NEW DOCUMENT
                       REWOUND BEFORE AND AFTER USE
                       MUST NOT CONTAIN *DECK CARD
            GID1   - RESERVED FOR FUTURE USE
            GID2   - RESERVED FOR FUTURE USE
            OUTPUT   - FTN ERROR MESSAGES
                       (PROGRAM MESSAGES ARE PUT INTO THE DAYFILE)

    DEFAULT EXECUTE CARD
        DOCUMNT,OLD,NEW,,PROG,AFTER,IN,GID1,GID2,OUTPUT.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 22000B

```
INPUT/OUTPUT UNITS
   UNIT  #     LFN                               USE
   -------     -------     ---------------------------------------------------
               IN          INPUT FILE FOR NEW DOCUMENT
               NEW         NEW DOCUMENT FILE
               OLD         OLD DOCUMENT FILE
               OUTPUT      FTN ERROR MESSAGES

EXAMPLES
     ASSUME THE OLD DOCUMENT FILE (ON LFN OLD) HAS THE FOLLOWING
     DOCUMENTS: A, B, D, F, G, H.

     TO ADD DOCUMENT C (ON LFN CC) IN ALPHABETICAL ORDER:
        DOCUMNT,,,A,C,,CC.
     THE NEW DOCUMENT FILE WILL HAVE: A, B, C, D, F, G, H.

     TO ADD DOCUMENT C (ON LFN CC) AT START OF THE FILE:
        DOCUMNT,,,A,C,0,CC.
     THE NEW DOCUMENT FILE WILL HAVE: C, A, B, D, F, G, H.

     TO ADD DOCUMENT C (ON LFN CC) AT THE END OF THE FILE:
        DOCUMNT,,,A,C,END,CC.
     THE NEW DOCUMENT FILE WILL HAVE: A, B, D, F, G, H, C.

     TO ADD DOCUMENT C (ON LFN CC) AFTER DOCUMENT F:
        DOCUMNT,,,A,C,F,CC.
     THE NEW DOCUMENT FILE WILL HAVE: A, B, D, F, C, G, H.

     TO DELETE DOCUMENT G:
        DOCUMNT,,,D,G.
     THE NEW DOCUMENT FILE WILL HAVE: A, B, D, F, H.

     TO REPLACE DOCUMENT F (NEW DOCUMENT ON LFN FF):
        DOCUMNT,,,R,F,,FF.
     THE NEW DOCUMENT FILE WILL HAVE: A, B, D, F, G, H.

     TO REPLACE DOCUMENT E (NEW DOCUMENT ON LFN EE):
        DOCUMNT,,,R,E,,EE.
     THE NEW DOCUMENT FILE WILL HAVE: A, B, D, E, F, G, H.
     NOTE THAT SINCE E DID NOT EXIST, REPLACE FUNCTION WAS
     CHANGED TO ADD (DOCUMNT,,A,E,,EE.).  BECAUSE THE AFTER
     PARAMETER WAS OMITTED, E WAS ADDED ALPHABETICALLY.

     TO GET (EXTRACT) DOCUMENT D:
        DOCUMNT,,,G,D.          (DOCUMENT WILL BE ON LFN G)
        DOCUMNT,,DD,G,D.        (DOCUMENT WILL BE ON LFN DD)
```
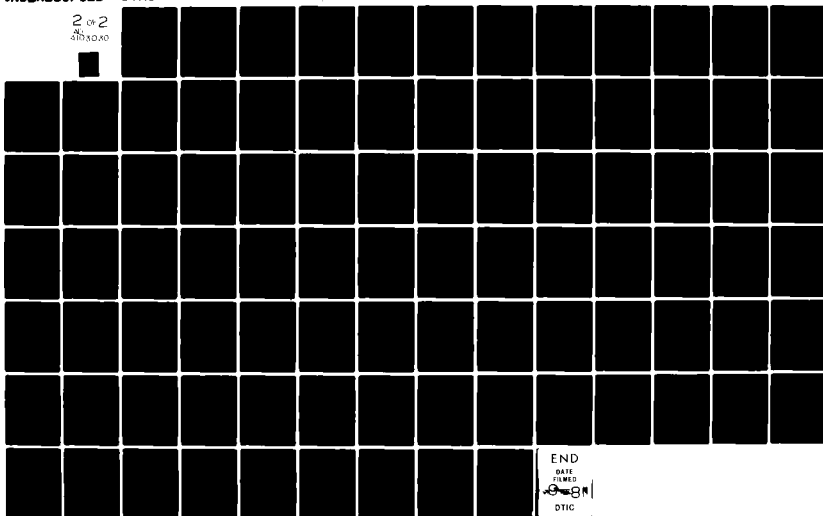
```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
        CLOSEM    FILESQ    IFETCH    MOVLEV    OPENM
        PUT       RECOVR    REMARK    SHIFT
   PART OF PROGRAM
        COPY    - COPY DOCUMENT FILE
        EOJ     - ABNORMAL TERMINATION ROUTINE
        NEW     - READ AND ADD NEW DOCUMENT
   OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        REPLAC  - REPLACE ONE CHARACTER WITH ANOTHER
        REQUEST - REQUEST,NEW,*PF.
        VFILL   - FILL ARRAY WITH WORD

ARITHMETIC STATEMENT FUNCTIONS
   FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
        A35FMT
   FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L21FMT    L41FMT    L51FMT    L61FMT    L77FMT
        L81FMT
   FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R41FMT

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATA WRITTEN: 01/20/76

DATE(S) REVISED
   04/08/76
   03/09/79 - REMOVE TRAILING BLANKS FROM DOCUMENT LINES

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:    UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'EOFAD'

PURPOSE
    ADD OR DELETE EOF'S TO/FROM A FILE (THRU EOI)

FUNCTIONAL CATEGORIES: Q0

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    THIS PROGRAM WAS WRITTEN FOR USE WITH THE BR2CCL PROCEDURE
    WHICH CONVERTS BEGIN/REVERT PROCEDURES TO CDC CYBER CONTROL
    LANGUAGE. THIS PROGRAM ADDS AN EOF EVERY TIME AN EOR IS
    ENCOUNTERED (BETWEEN PROCEDURES). IT WILL ALSO REMOVE ANY
    EOF'S PUT IN BY THE CONVERSION PROGRAM, LEAVING A SINGLE
    FILE WITH THE PROCEDURES SEPARATED BY EOR'S.

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   (FILE TO BE PROCESSED)
        ATTACH,UTILITY.
        EOFAD,*,....   (USER MUST SUPPLY * VALUE)
        (DO SOMETHING WITH TAPE2)

    FROM TTY
        ATTACH,TAPE1,....   (FILE TO BE PROCESSED)
        BEGIN.UTILITY.,EOFAD,*,....   (USER MUST SUPPLY * VALUE)
        (DO SOMETHING WITH TAPE2)

    EXECUTE CARD PARAMETERS
        EOFAD,WHICH,INFILE,OUTFILE,OUTPUT.
            WHICH   - ADD/DELETE OPTION (REQUIRED)
                    A OR ADD   - ADD EOF'S
                    D OR DEL OR DELETE - DELETE EOF'S
          INFILE - FILE TO BE PROCESSED
          OUTFILE - OUTPUT FILE
          OUTPUT - LISTABLE OUTPUT (FTN ERROR MSGS)

    DEFAULT EXECUTE CARD
        EOFAD,*,TAPE1,TAPE2,OUTPUT.
        (* - USER MUST SUPPLY)

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 25000B
    FL NEEDED TO RUN : 15000B

ERROR MESSAGES
    INPUT FILE EMPTY
        INPUT FILE HAS NO INFORMATION

    INVALID FIRST PARAMETER
        <WHICH> PARAMETER MUST BE ONE OF: A, ADD, D, DEL, DELETE

```
INPUT/OUTPUT UNITS
    UNIT  #    LFN                              USE
    -------    -------    -----------------------------------------------
               OUTPUT     LISTABLE OUTPUT (FTN ERROR MESSAGES)
               TAPE1      INPUT FILE TO BE PROCESSED
               TAPE2      OUTPUT FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM    ENDFILE    FILESQ    GET        IFETCH
        OPENM     PUT        WEOR
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        LASTC   - FIND LAST NON-BLANK CHARACTER IN AN ARRAY

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 01/18/78

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'EOI'

PURPOSE
    POSITION A FILE AT END-OF-INFORMATION (EOI)

FUNCTIONAL CATEGORIES: Q3

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NONE

EXECUTION
    FROM BATCH AND TTY
        BEGIN,UTILITY,,EOI,<FILE>.

    EXECUTE CARD PARAMETERS
        EOI,INFILE,OUTPUT.
            INFILE - FILE TO BE POSITIONED
            OUTPUT - FTN ERROR MESSAGES

    DEFAULT EXECUTE CARD
        EOI,TAPE1,OUTPUT.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 16000B

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
                INFILE   FILE TO BE POSITIONED
                OUTPUT   FTN ERROR MESSAGES

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   ENCODE   FILESQ   OPENM   REMARK
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES

ARITHMETIC STATEMENT FUNCTIONS
    L61FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 06/09/78

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'EXECARD'

PURPOSE
    EXTRACT EXECUTE CARD PARAMETER/SUBPROGRAM USAGE/PROCEDURE
    USAGE INFORMATION FROM DOCUMENTATION FILES (WHICH WERE
    PREPARED IN THE FORMAT GENERATED BY PROGRAM 'DOC')

FUNCTIONAL CATEGORIES: SO   Q6

REMARKS
    DOCUMENTATION FILE IS COMPATIBLE WITH AN UPDATE 'SOURCE'
    FILE OF *DECK'S ONLY.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   DATE   EOF   MOVLEV   OR
        RECOVR   REMARK   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        FSETFIT - SET FTN FIT VALUES
        GETLFNS - GET ACTUAL FILE NAMES
        PAKLFT   - SQUEEZE BLANKS AND ZEROS OUT OF PFN
        ZPFUNC   - ATTACH DOCUMENTATION FILE

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L21FMT   L51FMT   L61FMT   L77FMT
        L710FMT   L81FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R92FMT

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
1	ZZDOC	FILE CONTAINING DOCUMENTATION (ATTACHED AND RETURNED WITHIN PROGRAM) (IF THE USER REPLACES THE FILE NAME AT EXECUTION TIME, THE FILE IS ASSUMED TO BE ALREADY ATTACHED AND WILL NOT BE RETURNED)
	OUTPUT	LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,.EXECARD,LIBRARY,ID.

    FROM TTY
        BEGIN,UTILITY,.EXECARD,LIBRARY,,ID,ANY,....
        ROUTE,ANY,DC=PR.....

```
EXECUTE CARD PARAMETERS
    EXECARD,LIBRARY,ID,OUTPUT,LEFT,FULL,DOCFILE.
        LIBRARY - NAME OF LIBRARY TO BE EXTRACTED
                  MAY BE ONE OF:
                      NSRDC
                      UTILITY (DEFAULT)
                      ANY OTHER LIBRARY NAME (1-7 CHAR)
                  PROGRAM WILL ATTACH AND RETURN THE
                  DOCUMENTATION FILE.  THE PFN USED WILL BE
                  THE LIBRARY NAME SPECIFIED, FOLLOWED BY
                  'DOCUMENTATION'  (DEFAULT IS
                  'UTILITYDOCUMENTATION')
        ID      - ID UNDER WHICH DOCUMENTATION IS CATALOGED
                  (DEFAULT IS THE SYSTEM PUBLIC ACCESS ID)
        OUTPUT  - LISTABLE OUTPUT
        LEFT    - PRINT CENTERING
                  OMITTED OR 'LEFT' - LEFT-JUSTIFIED ON PAGE
                  ANYTHING ELSE     - CENTERED ON LARGE PAGE
                  (DEFAULT IS LEFT-JUSTIFIED)
        FULL    - OMITTED OR 'FULL' - PRINT ONE OF:
                      A) PROGRAM EXECUTE CARD, DESCRIPTION OF
                         PARAMETERS, DEFAULT EXECUTE CARD:
                      B) SUBPROGRAM USAGE AND DESCRIPTION OF
                         PARAMETERS:
                      C) PROCEDURE USAGE, DESCRIPTION OF
                         PARAMETERS AND DEFAULT BEGIN STATEMENT
                  ANYTHING ELSE     - PRINT ONLY EXECUTE CARD
                  OR SUBPROGRAM USAGE OR PROCEDURE USAGE
        DOCFILE - IF USER HAS PREVIOUSLY ATTACHED A
                  DOCUMENTATION FILE, PLACE LFN HERE AND OMIT
                  THE FIRST 2 PARAMETERS ('LIBRARY' AND 'ID').
                  WHEN THIS PARAMETER IS USED AND IS NOT
                  'ZZDOC', THE FILE IS NOT RETURNED AT END OF
                  EXECUTION.

    DEFAULT EXECUTE CARD
        EXECARD,UTILITY,*---*,OUTPUT,LEFT,FULL.ZZDOC.

    FL NEEDED TO LOAD: 30000B
    FL NEEDED TO RUN : 20000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/03/76

DATE(S) REVISED
    05/05/76
    05/18/76

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'FRAME'

PURPOSE
    PRINT A FRAME FOR LINING UP PRINTOUTS

FUNCTIONAL CATEGORIES: 01

LANGUAGE: FORTRAN IV EXTENDED

COMPUTER
    CDC 6000

REMARKS
    NONE

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        FRAME,<WHICH>,...

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        FRAME,<WHICH>,<OUTPUT>,...

    EXECUTE CARD PARAMETERS
        FRAME,WHICH.OUTFILE,COPIES.
        WHICH   - WHICH FRAME IS TO BE PRINTED. THE FOLLOWING
                   ARE SUPPORTED:
                   1T - 60-LINE FRAME FOR 1T (NARROW PAPER)
                        THE FRAME IN FROM COLUMN 2 THRU 73.
        OUTFILE - LISTABLE OUTPUT
        COPIES   - NUMBER OF COPIES TO BE PRINTED

    DEFAULT EXECUTE CARD
        FRAME,1T,OUTPUT,2.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 26000B
    FL NEEDED TO RUN : 14000B

ERROR MESSAGES
    INVALID TYPE
        THE VALUE OF <WHICH> IS NOT SUPPORTED.

OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
               OUTPUT   LISTABLE OUTPUT

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        MAXO        MINO
    PART OF PROGRAM
        P1T         - PRINT 1T FRAME
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV    - FAST I-FORMAT DECODE

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 01/16/81

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'GETOBJ'

PURPOSE
    EXTRACT ONE OBJECT MODULE FROM A SEQUENTIAL OBJECT FILE
    OR AN EDITLIB USER LIBRARY

FUNCTIONAL CATEGORIES: K3

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    IF THE OBJECT FILE IS SEQUENTIAL (SUCH AS THE OUTPUT OF A
    COMPILER), THE FIRST OCCURRENCE OF THE SPECIFIED MODULE
    IS EXTRACTED. IF THE OBJECT FILE IS AN EDITLIB USER
    LIBRARY, THE LAST OCCURRENCE IS EXTRACTED.

EXECUTION
    FROM BATCH AND TTY
        ATTACH,TAPE1,....   (INPUT FILE)
        BEGIN,UTILITY,,GETOBJ,,ROUTINE,....

    EXECUTE CARD PARAMETERS
        GETOBJ,INFILE,ROUTINE,OUTFILE,LIB,OUTPUT.
            INFILE   - INPUT OBJECT FILE
            ROUTINE - NAME OF DESIRED ROUTINE
                  (1-7 CHARACTERS)
            OUTFILE - WILL CONTAIN EXTRACTED ROUTINE
            LIB   - OMITTED - INFILE IS SEQUENTIAL
                    LIB   - INFILE IS EDITLIB USER LIBRARY
            OUTPUT - FTN ERROR MESSAGES

    DEFAULT EXECUTE CARD
        GETOBJ,TAPE1,RTN,TAPE2,,OUTPUT.

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	OUTPUT	FTN ERROR MESSAGES
	TAPE1	INPUT OBJECT FILE
	TAPE2	OUTPUT FILE CONTAINING EXTRACTED MODULE

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM    FILESQ    GET       IFETCH    OPENM
        PUT       REMARK    REWND     SHIFT     STOREF
        WEOR
    PART OF PROGRAM
        LOCLIB  - LOCATE MODULE IN AN EDITLIB USER LIBRARY
        LOCSEQ  - LOCATE MODULE IN A SEQUENTIAL FILE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES

ARITHMETIC STATEMENT FUNCTIONS
    L81FMT  - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    R21FMT  - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/18/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'GETREV'

PURPOSE
    EXTRACT ALL PAGES FROM A MANUAL WHICH WERE MODIFIED AFTER
    USER-SPECIFIED DATE

FUNCTIONAL CATEGORIES: S0   01

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    THE FIRST LINE OF EACH PAGE MUST HAVE THE FOLLOWING FORMAT:
        COL   CONTENTS
        -----   --------
         1   '1'
         6-14   DATE (MON YEAR)   (E.G., 'SEPT 1978')
         60-64   'PAGE '
         65-74   PAGE NUMBER (E.G., '4-6.1'

    THE TITLE PAGE AND THE 'R' PAGES ARE ALWAYS PRINTED.

EXECUTION
    FROM BATCH
        ATTACH,INFILE,.....   (MANUAL TO BE PROCESSED)
        BEGIN,UTILITY,,GETREV,,MONTH,YEAR.

    FROM TTY
        ATTACH,INFILE,.....   (MANUAL TO BE PROCESSED)
        BEGIN,UTILITY,,GETREV,,MONTH,YEAR,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        GETREV,INFILE,MONTH,YEAR,OUTPUT,PM.
            INFILE - INPUT FILE (MANUAL TO BE PROCESSED)
            MONTH   - FIRST 3-4 CHARACTERS OF MONTH (E.G., JAN,
                      FEB, ETC.) OR THE APPROPRIATE DIGITS
                      (1-12)
            YEAR   - 2 OR 4 DIGITS OF YEAR (E.G., 76, 1976)
                      (ALL PAGES MODIFIED AFTER MONTH,YEAR WILL BE
                      PRINTED)
            OUTPUT - LISTABLE OUTPUT
            PM   - OMITTED OR 'NOPM' - DO NOT PUT 'PM'
                                          MESSAGES AT START AND
                                          END OF OUTPUT
                      'C'   - PRINT CENTERED ON WIDE
                                          PAGE. NO 'PM' MSGS.
                      ANYTHING ELSE   - PUT THE MESSAGE
                                          'PM 1-PART NARROW
                                          UNLINED PAPER'
                                          AT START OF OUTPUT AND
                                          'PM RESTORE PRINTER'
                                          AT THE END
                             USE ONLY FOR TERMINALS WHICH WILL SUPPORT
                             'PM' MESSAGES

        DEFAULT EXECUTE CARD
            GETREV,INFILE,0,0,OUTPUT,NOPM.
                  (WILL PRINT ENTIRE MANUAL BUT IS NOT EFFICIENT)

```
FL NEEDED TO LOAD: 30000B
FL NEEDED TO RUN : 20000B
```

ERROR MESSAGES
    ABEND
        PROGRAM TERMINATED ABNORMALLY

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   ---
               INFILE   MANUAL TO BE PROCESSED
               OUTPUT   LISTABLE OUTPUT

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   FILESQ   GET   IFETCH
        OPENM   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        FINDWRD - SEARCH ARRAY FOR WORD
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE I-FORMAT DECODE

ARITHMETIC STATEMENT FUNCTIONS
    FAST I-FORMAT DECODE
        I23FMT
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT   L36FMT   L61FMT   L81FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/12/78

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'HEXDMP'

PURPOSE
    DUMP 9-TRACK TAPE IN HEXADECIMAL FORMAT

FUNCTIONAL CATEGORIES: J9   K4

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    ACCEPTS VARIABLE LENGTH RECORDS UP TO 5120 CDC CHARACTERS.
    DUMPS SPECIFIED NUMBER OF RECORDS (PRUS IF S TAPE) UP
    TO ONE FILE. TAPE POSITIONING MAY BE DONE BY SKIPF
    CONTROL CARD. AFTER ANY PARITY ERROR, PROGRAM PRINTS
    "PARITY ERROR ON RECORD ..." AND CONTINUES. OUTPUT IS
    RECORD NUMBER AND SIZE FOLLOWED BY LINES OF 120 HEX
    CHARACTERS.

    IN THE SPECIAL CASE WHEN TYPE=1, EACH CDC WORD CONTAINS 10
    HEX DIGITS. EACH 4-BIT HEX DIGIT OCCUPIES THE FIRST 4 BITS
    OF EACH 6-BIT CHARACTER. HEXDMP WILL REMOVE THE EXTRA BITS
    AND PRINT IN GROUPS OF 10 HEX DIGITS.

EXECUTION
    FROM BATCH
        REQUEST,TAPE1,HD,NORING,S,VSN=----.   OR   LABEL,----.
        BEGIN,UTILITY,,HEXDMP,,,....

    FROM TTY
        NOT USABLE FROM TTY

    EXECUTE CARD PARAMETERS
        HEXDMP(INFILE,START,NPRUS,OUTPUT,REW,TYPE,PL=NNNN)
                INFILE   - INPUT FILE
                START   - STARTING PRU/RECORD NUMBER (DECIMAL)
                           0 OR OMITTED - START AT BEGINNING OF FILE
                NPRUS   - NUMBER (DECIMAL) OF PRUS/RECORDS TO BE DUMPED
                           (DEFAULT: 9999999 - ALL OF FILE)
                OUTPUT   - LISTABLE OUTPUT
                REW   - INFILE REWIND OPTION
                           A   - REWIND AFTER USE
                           B   - REWIND BEFORE USE
                           R   - REWIND BEFORE AND AFTER USE
                           U   - REWIND BEFORE, REWIND AND UNLOAD
                                    AFTER USE
                           OTHER - NO REWIND (DEFAULT)
                           (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                           PRODUCE THE SAME RESULTS)
                TYPE   - 1   - EACH HEX DIGIT IS TO BE FIRST 4 BITS
                                    OF EACH 6-BIT CHARACTER (10 HEX
                                    DIGITS PER WORD)
                           OTHER - NO SPECIAL HANDLING
                NNNN   - LINE LIMIT IF DESIRED

```
DEFAULT EXECUTE CARD
   HEXDMP(TAPE1,1,9999999,OUTPUT,NOREW)

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 30000B
FL NEEDED TO RUN : 20000B
   (PROGRAM REDUCES TO MINIMUM NEEDED TO RUN)
```

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	OUTPUT	LISTABLE OUTPUT
1	TAPE1	9-TRACK TAPE TO BE DUMPED

EXAMPLES
```
   HEXDMP(TAPE9,1,10)      LIST FIRST 10 RECORDS ON TAPE9
   HEXDMP(,20,5,PL=150)    LIST RECORDS 20 THRU 24 ON TAPE1,
                           UP TO 150 LINES
```

METHOD
   BUFFER IN, ODD PARITY

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      BUFFERIN   LENGTH   UNIT
   PART OF PROGRAM
      HEX1   - EXTRACT 4 OF EACH 6 BITS
      PRT   - NORMAL PRINT
      PRT1   - PRINT FOR TYPE 1
   OTHERS
      GETLFNS - GET ACTUAL LOCAL FILE NAME
      IFMTV   - FAST VARIABLE LENGTH I-FORMAT DECODE
      SETREW - DECODE REWIND OPTION
      UNLOAD - UNLOAD,INFILE.

AUTHOR
   NORA TAYLOR   - DTNSRDC CODE 189.1
   SHARON GOOD   - DTNSRDC CODE 1892.1
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: JULY 1976

DATE(S) REVISED
   OCTOBER 1976
   03/03/77 - DVS - ADD 'TYPE' OPTION
                    ADD TYPE 1 CONVERSION
                    ACTIVATE REWIND OPTION

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY: UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY: UTILITY

PROGRAM 'JOBTIME'

PURPOSE
    PUT JOB CP EXECUTION TIME TO THIS POINT INTO DAYFILE

FUNCTIONAL CATEGORIES: Q0

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 03/10/75

DATE(S) REVISED

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        REMARK
    OTHERS
        NONE

EXECUTION
    FROM BATCH AND TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        JOBTIME.

    DEFAULT EXECUTE CARD
        JOBTIME.

    FL NEEDED TO LOAD: 21000B

LOCATION OF DECKS
    SOURCE
        TAPE LABELLED CSYSUT'LITYPL; P.F. UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'LINER'

PURPOSE
    COUNT LINES AND PAGES OF A FILE HAVING FIRST CHARACTER
    CARRIAGE CONTROL

FUNCTIONAL CATEGORIES: Q0

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NONE

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        ATTACH,TAPE1, . . .   FILE TO BE PROCESSED
        LINER.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .   FILE TO BE PROCESSED
        LINER.

    EXECUTE CARD PARAMETERS
        LINER,TAPE1,OUTPUT,REW.
            TAPE1 - FILE TO BE PROCESSED
            OUTPUT - LISTABLE OUTPUT
            REW   - REWIND OPTION FOR TAPE1
                    A   - REWIND AFTER USE
                    B   - REWIND BEFORE USE
                    R   - REWIND BEFORE AND AFTER USE
                    U   - REWIND BEFORE, REWIND AND UNLOAD
                            USE
                    OTHER - NO REWIND (DEFAULT)
                    (ANY WORDS BEGINNING WITH THESE LETTERS
                    WILL PRODUCE THE SAME RESULTS)

    DEFAULT EXECUTE CARD
        LINER,TAPE1,OUTPUT,NOREWIND.

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 17000B

ERROR MESSAGES
    INPUT FILE EMPTY
        INPUT FILE CONTAINS NO INFORMATION

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
               TAPE1   INPUT FILE
               OUTPUT   LISTABLE OUTPUT

METHOD

CHAR	ACTION
1	ADD 1 TO PAGE COUNTER; RESTART LINE COUNTER
SPACE	ADD 1 TO LINE COUNTER
0	ADD 2 TO LINE COUNTER
-	ADD 3 TO LINE COUNTER
OTHER	IGNORED

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE

AND	CLOSEM	DATE	FILESQ	GET
IFETCH	OPENM	RECOVR	REMARK	SHIFT
TIME				

    PART OF PROGRAM
       EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
       GETLFNS - GET ACTUAL LOCAL FILE NAMES
       SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    L11FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/31/73

DATE(S) REVISED
    01/10/75
    03/22/76 - CHANGE TO RECORD MANAGER; THRU EOI; NOREWIND
    03/23/76 - CORRECT EOR PROBLEM
    11/20/78 - CORRECT TOTAL LINE COUNTING

LOCATION OF DECKS
    SOURCE
       UPDATE LIBRARY: UTILITYPL,ID=CLIB
    OBJECT
       EDITLIB USER LIBRARY: UTILITY

PROGRAM 'LINERL'

PURPOSE
    LIST A DOCUMENT (CARRIAGE CONTROL IN COLUMN 1, ZERO BYTE
    TERMINATED RECORDS) WITH RECORD COUNT AND COUNT OF LINES ON
    EACH PAGE. LIST THRU END-OF-INFORMATION.

FUNCTIONAL CATEGORIES: 01 Q0

LANGUAGE: FORTRAN IV

REMARKS
    MAY BE USED TO LIST A DOCUMENT CREATED BY PROGRAM 'DOC'
    TO ASSIST IS DEFINING PAGES BEFORE USING PROGRAM 'DOCIT'
    TO COMPLETE THE DOCUMENT.

    EOR, EOF AND EOI ARE LISTED AND CAUSE LINE COUNT TO BE RESET
    TO 0 (ZERO).

EXECUTION
    FROM BATCH
        BEGIN.UTILITY,,LINERL,INFILE.

    FROM TTY
        ATTACH OR OTHERWISE CREATE INFILE.
        BEGIN.UTILITY,,LINERL,INFILE,OUT,R.
        ROUTE,OUT,DC=PR,.....

    EXECUTE CARD PARAMETERS
        LINERL,INFILE,OUTPUT,REW,LPI,START,INCR.
            INFILE   - INPUT DOCUMENT FILE
            OUTPUT   - LISTABLE OUTPUT
            REW   - INFILE REWIND OPTION
                A   - REWIND AFTER USE
                B   - REWIND BEFORE USE
                R   - REWIND BEFORE AND AFTER USE
                U   - REWIND BEFORE, REWIND AND UNLOAD
                         AFTER USE
                OTHER - NO REWIND (DEFAULT)
                (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                PRODUCE THE SAME RESULTS)
            LPI   - LINES PER INCH
                6   - 6 LINES PER INCH
                ANYTHING ELSE - 8 LINES PER INCH (DEFAULT)
            START   - STARTING LINE NUMBER (DEFAULT: 1)
            INCR   - LINE NUMBER INCREMENT (DEFAULT: 1)

    DEFAULT EXECUTE CARD
        LINERL,TAPE1,OUTPUT,NOREW,8,1,1.

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 17000B

```
INPUT/OUTPUT UNITS
   UNIT  #     LFN                          USE
   -------    -------    ------------------------------------------
              OUTPUT     LISTABLE OUTPUT
              TAPE1      INPUT DOCUMENT FILE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      AND        CLOSEM     DATE      FILESQ     GET
      IFETCH     OPENM      TIME
   OTHERS
      GETLFNS - GET ACTUAL LOCAL FILE NAMES
      IFMTV   - FAST VARIABLE I-FORMAT DECODE
      SETREW  - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
   L11FMT  - FAST L-FORMAT DECODE (LEFT-ADJ. ZERO-FILLED)

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 08/31/76

DATE(S) REVISED
   01/08/78 - MOVE PRINTOUT 1 PLACE TO RIGHT TO ALLOW MORE THAN
              9999 LINES.

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:   UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:   UTILITY
```

PROGRAM 'LISTBIN'

PURPOSE
    LIST BINARY MODULES AND PROCEDURES IN ONE OR MORE FILES

FUNCTIONAL CATEGORIES: Q7

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    INPUT FILE IS PROCESSED UNTIL:
        A) SPECIFIED NUMBER OF FILES, OR
        B) DOUBLE EOF

EXECUTION
    FROM BATCH
        ATTACH,TAPE1, . . .   (FILE TO BE LISTED)
        BEGIN.UTILITY,,LISTBIN.

    FROM TTY
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .   (FILE TO BE LISTED)
        CONNECT,OUTPUT.   OR   LISTBIN,,ANY.
        LISTBIN.   ROUTE,ANY,DC=PR,.....

    EXECUTE CARD PARAMETERS
        LISTBIN,INFILE,OUTPUT,NFILES,REW,EXTEND,ALPHA.
            INFILE   - FILE TO BE LISTED
            OUTPUT   - PRINTER OUTPUT
            NFILES   - NUMBER OF FILES TO BE LISTED
                       (OMITTED OR INVALID = 1 FILE)
                       (NOTE: PROCESSING WILL STOP IF DOUBLE
                       EOF READ BEFORE SPECIFIED NUMBER OF FILES)
            REW   - REWIND OPTION FOR TAPE1
                       A   - REWIND AFTER USE
                       B   - REWIND BEFORE USE
                       R   - REWIND BEFORE AND AFTER USE
                       U   - REWIND BEFORE, REWIND AND UNLOAD
                                AFTER USE
                       OTHER - NO REWIND (DEFAULT)
                       (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                       PRODUCE THE SAME RESULTS)
            EXTEND   - OMITTED OR 'NO - DO NOT LIST DATE, TIME,
                                         OS, ETC.
                       ANYTHING ELSE   - LIST DATE, TIME, OS, ETC.
                       (OMIT FOR TTY AS OUTPUT IS MORE THAN 72
                       CHARACTERS)
            ALPHA   - ALPHABETICAL LIST OF OBJECT MODULES OPTION
                       OMITTED - NO ALPHABETICAL LIST
                       TTY   - ALPHABETICAL LIST TO FIT TTY
                       OTHER   - WIDE PAGE LIST

    DEFAULT EXECUTE CARD
        LISTBIN,TAPE1,OUTPUT,1,NOREWIND.

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 31000B
FL NEEDED TO RUN : 21000B
    (PROGRAM ADJUSTS CORE UP AND DOWN AS REQUIRED)

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	OUTPUT	LISTABLE OUTPUT
1	TAPE1	FILE TO BE LISTED

METHOD
  1) IF REQUESTED, FILE IS REWOUND.
  2) THE FIRST 200 WORDS OF EACH LOGICAL RECORD ARE READ IN.
    2A) WORD 1 IS TESTED FOR PRFX TABLE (WORD 0 OF TABLE
        STARTS 7700B). IF NOT, THIS IS NOT AN OBJECT MODULE.
        FIRST 4 WORDS ARE PRINTED (PRECEDED BY '!').
        IT IF IS AN OBJECT MODULE. THE NAME IS TAKEN FROM
        CHARACTERS 1-7 OF WORD 1 OF THE PREFIX TABLE.
    2B) TEST FOR PRESENCE OF PIDL (3400), ASCM(5000),
        APCM(5300) OR EAPCM (5400) TABLES AND GET OVERLAY
        NUMBER AND ROUTINE LENGTH. IF POSSIBLE.
    2C) GO BACK TO 2) UNTIL SPECIFIED NUMBER OF EOF'S OR
        DOUBLE EOF.
  3) IF REQUESTED, THE FILE IS REWOUND OR UNLOADED.

  REFERENCE: 60344200 - LOADER REFERENCE MANUAL - CHAPTER 8

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
        DATE   LENGTH   MOD   RECOVR   REMARK
        SHIFT   TIME   UNIT
    PART OF LANGUAGE
        EOJ   - ABNORMAL TERMINATION ROUTINE
        PRTBL   - PRINT ONE PAGE OF ALPHABETICAL LIST
    OTHERS
        ASORTMV - SORT 2-DIMENSIONAL ARRAY USING MOVLEV
        GETLFNS - GET ACTUAL FILE NAMES
        IFINDCH - FIND SPECIFIED CHARACTER
        IFMTV   - FAST I-FORMAT DECODE
        MOVSTR - MOVE CHARACTER STRING
        REDUCE - ADJUST CORE UP AND DOWN
        SETREW - DECODE REWIND OPTION
        UNLOAD - RETURN.TAPE1.

ARITHMETIC STATEMENT FUNCTIONS
    FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
        A71FMT
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L21FMT   L38FMT   L61FMT   L71FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R13FMT   R14FMT   R21FMT   R23FMT   R35FMT
        R38FMT   R47FMT   R51FMT   R56FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/18/74

DATE(S) REVISED
    01/14/75
    03/26/75
    04/30/75
    03/03/76
    06/23/76
    12/13/76 - ADD 54-TABLE PROCESSING
    03/30/77 - ADD ALPHABETICAL LIST OPTION
    02/17/78 - ADD SUPPORT FOR PROCEDURES

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'LISTCMP'

PURPOSE
    LIST AN UPDATE COMPILE FILE, EACH DECK BEGINNING ON A NEW
    PAGE WITH A BANNER PAGE PRECEDING IT

FUNCTIONAL CATEGORIES: Q7 O1

REMARKS
    A NEW DECK BEGINS:
        A) AFTER END-OF-SECTION OR END-OF-PARTITION;
        B) WITH CHANGE OF DECK NAME (COL 74-82) ONLY IF PREVIOUS
           CARD WAS FORTRAN END CARD ('   END   ' IN
           COL 1-20) OR COMPASS END CARD ('END ' IN COL 11-14).
    THE CONDITIONS FOR B) ALLOW DECKS TO HAVE *COMDECK CALLS
    WITHOUT TRIGGERING A NEW DECK. (*COMDECK CALLS HAVE THE
    COMDECK NAME IN 74-82, WHICH IS USUALLY DIFFERENT FROM THE
    MAIN DECK NAME.)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   FILESQ   GET   IFETCH   MOD
        OPENM   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        BANR   - PRINT BANNER PAGE
        GETLFNS   - GET ACTUAL LOCAL FILE NAMES
        MFETCH   - READ WORD IN USER'S FL
        REDUCE   - REDUCE CORE TO MINIMUM NEEDED TO RUN
        SETREW   - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    A94FMT   - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    L11FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L41FMT   - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS

FORTRAN LOGICAL UNIT	LOCAL FILE NAME	USE
	TAPE1	INPUT COMPILE FILE
	OUTPUT	LISTABLE OUTPUT

```
EXECUTION
   FROM BATCH
      ATTACH.OLDPL,....
      UPDATE,P,...
      ATTACH,UTILITY.
      LIBRARY.UTILITY.
      LISTCMP.COMPILE.

   FROM TTY
      ATTACH,OLDPL,....
      UPDATE,P,....
      ATTACH,UTILITY.
      LIBRARY,UTILITY.
      LISTCMP.COMPILE,OUT.
      DISPOSE.OUT,PR=XYY.

   EXECUTE CARD PARAMETERS
      LISTCMP.INFILE,OUTPUT,REW,LPI.
         INFILE   - INPUT INFILE
         OUTPUT   - LISTABLE OUTPUT
         REW      - REWIND OPTION FOR COMPILE FILE
               A     - REWIND AFTER USE
               B     - REWIND BEFORE USE
               R     - REWIND BEFORE AND AFTER USE
                        (DEFAULT)
               U     - REWIND BEFORE, REWIND AND UNLOAD
                        AFTER USE
               OTHER - NO REWIND
               (ANY WORDS BEGINNING WITH THESE LETTERS WILL
               PRODUCE THE SAME RESULTS)
         LPI      - LINES PER INCH FOR OUTPUT LISTING
               OMITTED OR 'EIGHT' OR '8' - 8 LPI
               ANYTHING ELSE - 6 LPI

   DEFAULT EXECUTE CARD
      LISTCMP.TAPE1,OUTPUT,REWIND,8.

   FL NEEDED TO LOAD: 31000B
   FL NEEDED TO RUN : 21000B
      (PROGRAM REDUCES TO MINIMUM NEEDED TO RUN)

AUTHOR
   DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 07/09/75

DATE(S) REVISED
   01/07/76

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY:  UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'LISTEOI'

PURPOSE
    LIST A FILE INSERTING *EOR, *EOF, *EOI WHERE APPROPRIATE

FUNCTIONAL CATEGORIES: O1

REMARKS
    LISTING IS TO END-OF-INFORMATION.
    RECORD LENGTH IS UP TO 90 CHARACTERS.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   CONNEC   FILESQ   GET   IFETCH
        OPENM   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        MSETFIT - SET FTN FIT FIELD
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    NONE

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --

      5   ZZTTY   TTY OUTPUT
               OUTPUT   PRINTER OUTPUT
               TAPE1   FILE TO BE LISTED

EXECUTION
    FROM BATCH
        ATTACH.UTILITY.
        LIBRARY.UTILITY.
        ATTACH,TAPE1, . . .   (FILE TO BE LISTED)
        LISTEOI.

    FROM TTY
        ATTACH.UTILITY.
        LIBRARY,UTILITY.
        ATTACH,TAPE1, . . .   (FILE TO BE LISTED)
        LISTEOI.,OUT.
        ROUTE,OUT,DC=PR,....

```
EXECUTE CARD PARAMETERS
    LISTEOI,INFILE,OUTPUT,REW,PAGING.
        INFILE - INPUT FILE TO BE LISTED
        OUTPUT - LISTABLE OUTPUT
        REW    - INFILE REWIND OPTION
                A      - REWIND AFTER USE
                B      - REWIND BEFORE USE
                R      - REWIND BEFORE AND AFTER USE
                U      - REWIND BEFORE, REWIND AND UNLOAD
                         AFTER USE
                OTHER - NO REWIND (DEFAULT)
                (ANY WORDS STARTING WITH THESE LETTERS WILL
                PRODUCE THE SAME RESULTS)
        PAGING - IF OMITTED OR 'NEWPAG', EACH FILE STARTS
                ON A NEW PAGE.
                IF ANYTHING ELSE, CONTINUE ON SAME PAGE.

    DEFAULT EXECUTE CARD
        LISTEOI,TAPE1,OUTPUT,NOREWIND,NEWPAG.

    FL NEEDED TO LOAD: 30000B
    FL NEEDED TO RUN : 20000B

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 05/29/74

DATE(S) REVISED
    05/28/75
    04/06/76

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:  UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'LISTN'

PURPOSE
    NUMBERED LIST OF ONE FILE OF ZERO-BYTE TERMINATED RECORDS

FUNCTIONAL CATEGORIES: 01

LANGUAGE: PASCAL 6000 RELEASE 3

REMARKS
    ONLY ONE FILE IS LISTED. END-OF-RECORD MARKS ARE IGNORED.
    THE INPUT FILE IS REWOUND BEFORE AND AFTER USE.

EXECUTION
    FROM BATCH
        ATTACH,FILE1,.....   (FILE TO BE LISTED)
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.   OR   LIBRARY,UTILITY.
        LISTN.

    FROM TTY
        ATTACH,FILE1,.....   (FILE TO BE LISTED)
        BEGIN,UTILITY,,LISTN,,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        LISTN,INFILE,OUTPUT/<OPTS>.
            INFILE   - INPUT FILE TO BE LISTED
            OUTPUT   - LISTABLE OUTPUT
            OPTS   - 0 OR MORE OF
                       D6 - DENSITY IS 6 LINES PER INCH
                             (DEFAULT: 8 LINES PER INCH)
                       LN - N IS MAXIMUM LINES TO PRINT
                             (1 <= N <= 999999; DEFAULT: 10000)
                       (LIST IS COMMA-SEPARATED WITH NO EMBEDDED
                       BLANKS)

    DEFAULT EXECUTE CARD
        LISTN,FILE1,OUTPUT/D8,L10000.

    FL NEEDED TO LOAD: 16000B
    FL NEEDED TO RUN : 7700B

INPUT/OUTPUT UNITS
      LFN   USE
    -------   ---
    FILE1   INPUT FILE TO BE LISTED
              (REWOUND BEFORE AND AFTER USE)
    OUTPUT   LISTABLE OUTPUT

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        DATE   EOF   EOLN   LINELIMIT OPTION
        RESET   TIME
    OTHERS
        NONE

AUTHOR
    DAVID V SOMMER - DTNSDRC CODE 1892.2

DATE WRITTEN: 11/07/78

DATE(S) REVISED
    08/02/79 - CONVERT FROM PASCAL 2 TO PASCAL 6000 RELEASE 3
             - ADD OPTIONS 'D' AND 'L'
               (OPTION 'D' ELIMINATES NEED FOR PROGRAM 'LISTN8')

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'LISTZ'

PURPOSE
    LIST ZERO-BYTE TERMINATED RECORDS WITH RECORD NUMBER AND
    LENGTHS (USER MAY SPECIFY MAXIMUM NUMBER OF CHARACTERS TO
    READ (DEFAULT: 140) AND PRINT (DEFAULT: 110)

FUNCTIONAL CATEGORIES: 01

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    NONE

EXECUTION
    FROM BATCH
        ATTACH,TAPE1,....   FILE TO BE LISTED
        BEGIN,UTILITY,,LISTZ.

    FROM TTY
        ATTACH,TAPE1,....   FILE TO BE LISTED
        BEGIN,UTILITY,,LISTZ,,OUT.
        ROUTE,OUT,DC=PR,.....

    EXECUTE CARD PARAMETERS
        LISTZ,INFILE,OUTPUT,REW,LPI,START,INCR,MAXIN,MAXOUT,FLAG.
          INFILE - INPUT FILE TO BE LISTED
          OUTPUT - LISTABLE OUTPUT
                   COL 1 - UNIT RECORD NUMBER WITHIN FILE
                   COL 2 - UNIT RECORD NUMBER WITHIN LOGICAL
                          RECORD
                   COL 3 - LENGTH OF UNIT RECORD (UP TO MAXIN)
                          (LAST NON-BLANK CHARACTER)
                          (IF MORE THAN MAXIN, AN ASTERISK (*)
                          FOLLOWS THE NUMBER)
                   COL 4 - FIRST 110 CHARACTERS OF UNIT RECORD
                          (NEXT 110 CHARACTER ARE PRINTED ON
                          NEXT LINE, IF REQUESTED)
          REW   - INFILE REWIND OPTION
              A   - REWIND AFTER USE
              B   - REWIND BEFORE USE
              R   - REWIND BEFORE AND AFTER USE
              U   - REWIND BEFORE, REWIND AND
                      UNLOAD AFTER USE
             OTHER - NO REWIND (DEFAULT)
             (ANY WORDS STARTING WITH THESE LETTERS WILL
             PRODUCE THE SAME RESULTS)
             (IF ABEND, INFILE IS NOT REWOUND)
          LPI   - LINES PER INCH
              6   - 6 LINES PER INCH
              ANYTHING ELSE - 8 LINES PER INCH (DEFAULT)

```
START    - STARTING LINE NUMBER (DEFAULT: 1)
           (USE 'E' FOR STANDARD EDITOR SEQUENCING:
            START=100, INCR=10)
           (USE 'U' FOR STANDARD UPDATE SEQUENCING:
            START=2, INCR=1)
INCR     - LINE NUMBER INCREMENT (DEFAULT: 1)
           (IF START=E, INCR=10:
            IF START=U, INCR=1)
MAXIN    - MAXIMUM # OF CHARACTER PER RECORD TO READ
           NNN         - SPECIFIC NUMBER (MAXIMUM: 220)
           ALL         - 220
           OMITTED     - 140
           NON-DIGIT   - 140
           (20 ADDITIONAL CHARACTERS ARE READ SO THAT
           LONG RECORDS CAN BE FLAGGED)
MAXOUT   - MAXIMUM # OF CHARACTERS TO PRINT
           NNN         - SPECIFIC NUMBER (MAXIMUM: MAXIN)
           ALL         - MAXIN
           OMITTED     - 110 (1 PRINT LINE)
           NON-DIGIT   - 140
FLAG     - FLAG RECORDS LONGER THAN THIS WITH AN *
           NNN         - SPECIFIC LINE LENGTH (MAX: MAXIN)
           MAXIN       - MAXIN
           MAXOUT      - MAXOUT
           OMITTED     - 140
           INVALID     - MAXIN
```

DEFAULT EXECUTE CARD
    LISTZ,TAPE1,OUTPUT,NOREW,8,1,1,140,110,140.

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 32000B
FL NEEDED TO RUN : 21000B

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	OUTPUT	LISTABLE OUTPUT
	TAPE1	INPUT FILE TO BE LISTED

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   DATE   FILESQ   GET   IFETCH
        MAXO   OPENM   RECOVR   REMARK   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        CHFILL   - CHARACTER FILL
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST I-FORMAT DECODE
        LASTCH   - FIND LAST NON-BLANK CHARACTER IN ARRAY
        SETREW   - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    L61FMT   - FAST L-FORMAT DECODE (LEFT-ADJ. ZERO-FILLED)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/12/76

DATE(S) REVISED
    06/11/76 - ADD LINES PER INCH OPTION
    07/29/76 - ADD START AND INCREMENT OPTIONS
    09/30/76 - ADD RECORD LENGTH TO PRINTOUT
    12/14/76 - PROCESS TO EOI
    02/04/77 - ADD START=E, START=U
    02/22/77 - INCREASE LINE LENGTH TO I3
    05/06/77 - ADD DAYFILE MESSAGE WITH # LINES AND LONGEST LINE
    02/23/78 - ADD NEW COLUMN 2 WITH RECORD NUMBER WITHIN
               LOGICAL RECORD
    05/02/78 - INCREASE RECORD NUMBER FIELD TO I4
    06/07/78 - INCREASE RECORD NUMBER FIELD TO I5
             - INCREASE MAXIMUM RECORD LENGTH LISTED TO 200
    11/06/78 - FIX EOR/EOF LINES
    07/23/79 - INCREASE MAXIMUM RECORD LENGTH TO 220
             - ADD 'MAXIN', 'MAXOUT', 'FLAG' PARAMETERS
             - FLAG LONG RECORDS WITH * NEXT TO RECORD LENGTH

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'LIST1'

PURPOSE
    LIST (CENTERED) ONE COPY OF CARDS (UP TO 90 CHARACTERS)
    HAVING CARRIAGE CONTROL IN COLUMN 1. OPTIONALLY PRINT CARD,
    PAGE AND LINE COUNTS AND LINE LENGTHS.

FUNCTIONAL CATEGORIES: 01

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    WHEN LINES PARAMETER OMITTED, LIST1 WILL LIST THE FORM
    CENTERED ON WIDE PAPER.

    WHEN LINES PARAMETER SPECIFIED, IN ADDITION TO PRINTING THE
    FORM, THE CARD NUMBER, PAGE NUMBER OF THE FORM, AND LINE
    NUMBER ON THE PAGE ARE PRINTED IN FRONT OF THE LINE AND THE
    LINE LENGTH (POSITION OF THE LAST NON-BLANK CHARACTER) IS
    PRINTED AFTER EACH LINE. LINES LONGER THAN A SPECIFIED
    LENGTH MAY BE FLAGGED.

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,LIST1,INPUT.
        '   7/8/9   EOR
            (CARDS TO BE LISTED)
        "   6/7/8/9   EOF

    FROM TTY
        ATTACH,IN,.....   (FILE TO BE LISTED)
        BEGIN,UTILITY,,LIST1,IN,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        LIST1,INFILE,OUTPUT,REW,LINES,START,INCR,FLAG.
            INFILE - INPUT FILE TO BE LISTED
            OUTPUT - LISTABLE OUTPUT
            REW   - INFILE REWIND OPTION
                    A   - REWIND AFTER USE
                    B   - REWIND BEFORE USE
                    R   - REWIND BEFORE AND AFTER USE
                    U   - REWIND BEFORE, REWIND AND UNLOAD
                              AFTER USE
                    OTHER - NO REWIND (DEFAULT)
                    (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                    PRODUCE THE SAME RESULTS)
            LINES   - OPTION TO PRINT CARD, PAGE AND LINE COUNTS
                      OMITTED OR 'NOLINE' - DO NOT PRINT COUNTS
                      ANYTHING ELSE   - PRINT COUNTS
            START   - STARTING CARD COUNT (WHEN COUNTS PRINTED)
                      (DEFAULT: 1)
            INCR   - CARD COUNT INCREMENT (WHEN COUNTS PRINTED)
                      (DEFAULT: 1)
            FLAG   - FLAG LONG LINES (WHEN COUNTS PRINTED)
                      OMITTED - FLAG LINES LONGER THAN 72 CHAR
                      1-90   - FLAG LINES LONGER THAN THIS
                      OTHER   - DO NOT FLAG LINES

```
          DEFAULT EXECUTE CARD
             LIST1,TAPE1,OUTPUT,NOREW,NOLINE,1,1,72.

          FL NEEDED TO LOAD: 30000B
          FL NEEDED TO RUN : 20000B

      DATA CARDS
          COL    CONTENTS
          -----  --------
           1     CARRIAGE CONTROL
                 1     - NEW PAGE
                 SPACE - NEXT LINE
                 0     - LEAVE 1 BLANK LINE
                 -     - LEAVE 2 BLANK LINES (NOT FOR 200UT)
                 +     - PRINT ON SAME LINE
          2-90   LINE TO BE PRINTED

      INPUT/OUTPUT UNITS
          UNIT #    LFN                          USE
          ------    -------   ------------------------------------------
                    OUTPUT    LISTABLE OUTPUT
                    TAPE1     INPUT FILE TO BE LISTED
                    DAYFILE   NUMBER OF RECORDS AND LONGEST LINE

   SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
       PART OF LANGUAGE
           AND         CLOSEM    FILESQ    GET       IFETCH
           MAXO        OPENM     OR        RECOVR    REMARK
       PART OF PROGRAM
           EOJ     - ABNORMAL TERMINATION ROUTINE
       OTHERS
           GETLFNS - GET ACTUAL LOCAL FILE NAMES
           IFMTV   - FAST I-FORMAT DECODE
           LASTC   - FIND LAST NON-BLANK IN ARRAY
           SETREW  - DECODE REWIND OPTION

   ARITHMETIC STATEMENT FUNCTIONS
       L11FMT  - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
       R92FMT  - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
```

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 10/17/73

DATE(S) REVISED
    11/16/73
    12/07/73
    02/03/75
    08/28/75
    09/02/76 - ADD LINE OPTION
    09/07/76 - ADD LINE LENGTH PRINTOUT
    05/06/77 - ADD DAYFILE MESSAGE WITH NUMBER OF RECORDS AND
                LONGEST LINE
    05/24/77 - ADD DAYFILE MESSAGE FOR INPUT FILE EMPTY
    11/09/77 - IF CC=+, MOVE LINE LENGTH TO OTHER SIDE OF FLAG

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'LIST2'

PURPOSE
    SINGLE/DOUBLE SPACE LISTING, 6 OR 8 LINES PER INCH,
    WITH OPTIONAL SKIP OVER PERFORATION AT BOTTOM OF PAGE
    (FIRST 120 CHARACTERS)

FUNCTIONAL CATEGORIES: 01

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    CONTROL INFORMATION IS PASSED TO PROGRAM VIA EXECUTE
    STATEMENT OR FIRST CARD OF INPUT.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET.LIB=UTILITY.
        LIST2.,,<PARAMETERS>.
        7/8/9   EOR
           (DECK TO BE LISTED)
        6/7/8/9   EOF

    FROM TTY
        ATTACH,FILE,.....   (FILE TO BE LISTED)
        BEGIN.UTILITY,.LIST2,FILE,OUT.<PARAMETERS>.
        ROUTE.OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        LIST2.INPUT,OUTPUT,SPACING,REW,LPI.PAGING.
            INPUT   - FILE TO BE LISTED
            OUTPUT   - LISTABLE OUTPUT
            SPACING - SPACING/CONTROL CARD OPTION
                        0   - CONTROL INFORMATION IS ON FIRST
                                 CARD ON INPUT FILE
                        2   - DOUBLE SPACING
                        OTHER - SINGLE SPACING
            REW   - INPUT REWIND OPTION
                        A   - REWIND AFTER USE
                        B   - REWIND BEFORE USE
                        R   - REWIND BEFORE AND AFTER USE
                        U   - REWIND BEFORE AND REWIND AND
                                 UNLOAD AFTER USE
                        OTHER - NO REWIND (DEFAULT)
                        (NOTE: IF INPUT FILE IS 'INPUT' AND/OR
                        SPACING IS '0', 'NO REWIND' IS FORCED.)
            LPI   - LINES PER INCH
                        8   - 8 LINES PER INCH
                        OTHER - 6 LINES PER INCH (DEFAULT)
            PAGING   - PAGING OPTION
                        R   - SKIP OVER PERFORATION AT BOTTOM OF
                                 PAGE
                        OTHER - DO NOT SKIP (DEFAULT)

    DEFAULT EXECUTE CARD
        LIST2.INPUT.OUTPUT,SINGLE,NOREW.6.SINGLE.NOSKIP.

```
       FL NEEDED TO LOAD: 36000B
       FL NEEDED TO RUN : 26000B

       DEFAULT PL: 5000 LINES

    DATA CARD (IF SPACING=0)
       COL   CONTENTS
       ---   --------
        1    SPACING OPTION
             2     - DOUBLE SPACING
             OTHER - SINGLE SPACING
        2    LINES PER INCH
             8     - 8 LINES PER INCH
             OTHER - 6 LINES PER INCH
        3    PAGING OPTION
             R     - SKIP OVER PERFORATION AT BOTTOM OF
                     PAGE
             OTHER - DO NOT SKIP

    INPUT/OUTPUT UNITS
       UNIT  #      LFN                           USE
       -------     -------    ---------------------------------------------
                   INPUT      FILE TO BE LISTED
                   OUTPUT     LISTABLE OUTPUT

    SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
       PART OF LANGUAGE
          CLOSEM    FILESQ    GET       IFETCH    OPENM
          RECOVR    REMARK    SHIFT
       PART OF PROGRAM
          EOJ     - ABNORMAL TERMINATION ROUTINE
       OTHERS
          GETLFNS - GET ACTUAL LOCAL FILE NAMES
          LASTC   - FIND LAST NON-BLANK
          SETREW  - DECODE REWIND OPTION

    ARITHMETIC STATEMENT FUNCTIONS
       FAST L-FORMAT DECODES (LEFT-ADJ, ZERO-FILLED)
          L11FMT    L12FMT    L13FMT

    AUTHOR
       DAVID V SOMMER - DTNSRDC CODE 1892.2

    DATE WRITTEN: 08/15/75

    DATE(S) REVISED
       08/18/75
       03/21/77 - GENERAL IMPROVEMENTS

    LOCATION OF DECKS
       SOURCE
          UPDATE LIBRARY: UTILITYPL,ID=CSYS
       OBJECT
          EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'LIST3'

PURPOSE
    LIST FIRST (UP TO 90-CHARACTER. ZERO BYTE TERMINATED) RECORD
    IN EACH LOGICAL RECORD THROUGH EOI

FUNCTIONAL CATEGORIES: 01

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM   DATE   FILESQ   GET   IFETCH
        OPENM   RECOVR   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    NONE

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
                OUTPUT   LISTABLE OUTPUT
                TAPE1   INPUT FILE TO BE LISTED

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (FILE TO BE LISTED)
        LDSET,LIB=UTILITY.
        LIST3.

    FROM TTY
        ATTACH,UTILITY.
        ATTACH,TAPE1,....   (FILE TO BE LISTED)
        LIBRARY,UTILITY.
        LIST3,.OUT.
        ROUTE,OUT,DC=PR,.....

```
EXECUTE CARD PARAMETERS
    LIST3,INFILE,OUTPUT,REW,EOR.
        INFILE  - INPUT FILE TO BE LISTED
        OUTPUT  - LISTABLE OUTPUT
        REW     - INFILE REWIND OPTION
                A   - REWIND AFTER USE
                B   - REWIND BEFORE USE
                R   - REWIND BEFORE AND AFTER USE
                        (DEFAULT)
                U   - REWIND BEFORE, REWIND AND UNLOAD
                        AFTER USE   (IF JOB ABENDS, U IS
                        CHANGED TO R)
                OTHER - NO REWIND
                (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                PRODUCE THE SAME RESULTS)
        EOR     - ONE OF THE FOLLOWING:
                OMITTED OR EOR - PRINT EOR/LEVEL NUMBER
                    AND EOF ON SEPARATE LINE
                EOF - PRINT EOR (WITHOUT LEVEL NUMBER) ON
                    DATA LINE, EOF ON SEPARATE LINE
                N OR NO - DO NOT PRINT EOR/EOF INFORMATION
                ANYTHING ELSE - PRINT EOR/EOF ON DATA LINE
                    (NO EOR LEVEL NUMBER)

  DEFAULT EXECUTE CARD
    LIST3,TAPE1,OUTPUT,REWIND.

  FL NEEDED TO LOAD: 26000B
  FL NEEDED TO RUN : 17000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 11/24/75

DATE(S) REVISED
    12/22/75
    03/22/76
    05/13/76 - INCREASE TO 90 CHARACTERS

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CLIB
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

```
PROGRAM 'LIST4'

PURPOSE
    LIST UNIT RECORDS, THRU EOI, WHICH HAVE '1' IN COLUMN 1

FUNCTIONAL CATEGORIES:  O1

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM    DATE      FILESQ    GET       IFETCH
        OPENM     RECOVR    SHIFT     TIME
    PART OF PROGRAM
        EOJ      - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IOPEN   - TEST FOR RM FILE OPEN
        SETREW  - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
    L11FMT  - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS
    UNIT  #      LFN                            USE
    -------    -------    -------------------------------------------
               OUTPUT     LISTABLE OUTPUT
               TAPE1      INPUT FILE TO BE LISTED

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,TAPE1,.....      (FILE TO BE LISTED)
        LDSET,LIB=UTILITY.
        LIST4.

    FROM TTY
        ATTACH,UTILITY.
        ATTACH,TAPE1,.....      (FILE TO BE LISTED)
        LIBRARY,UTILITY.
        LIST4,,OUT.
        ROUTE,OUT,DC=PR,.....
```

```
EXECUTE CARD PARAMETERS
    LIST4,INFILE,OUTPUT,REW.
        INFILE  - INPUT FILE TO BE LISTED
        OUTPUT  - LISTABLE OUTPUT
        REW     - INFILE REWIND OPTION
                A     - REWIND AFTER USE
                B     - REWIND BEFORE USE
                R     - REWIND BEFORE AND AFTER USE
                        (DEFAULT)
                U     - REWIND BEFORE, REWIND AND UNLOAD
                        AFTER USE
                OTHER - NO REWIND
                (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                PRODUCE THE SAME RESULTS)

    DEFAULT EXECUTE CARD
        LIST4,TAPE1,OUTPUT,REWIND.

    FL NEEDED TO LOAD: 26000B
    FL NEEDED TO RUN : 17000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 12/22/75

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:   UTILITYPL.ID=CLIB
    OBJECT
        EDITLIB USER LIBRARY:   UTILITY
```

PROGRAM 'MANUAL'

PURPOSE
    EXTRACT REVISION PAGES FROM A MANUAL (CCRM OR CCBRM)

FUNCTIONAL CATEGORIES: SO 01

LANGUAGE: FORTRAN IV EXTENDED

COMPUTER
    CDC 6000

REMARKS
    THE REVISION NUMBER MUST BE IN COLUMN 22 OF THE TOP-OF-PAGE
    LINE.

    PAGES WITH NO REVISION NUMBER (BLANK IN 22), SUCH AS THE
    TITLE PAGE, ARE ALWAYS PRINTED.

    SPECIFYING REVNO=0 WILL PRINT THE ENTIRE MANUAL, BUT IS NOT
    EFFICIENT. THE FASTEST WAY IS TO USE COPYE.

EXECUTION
    FROM BATCH
        ATTACH,IN,....   (MANUAL TO BE PROCESSED)
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.   -OR-   LIBRARY,UTILITY.
        MANUAL,,*.

    FROM TTY
        BEGIN,MANUAL,,<MANUAL-NAME>,<REVNO>,OUT.
        ROUTE,OUT,DC=PR,TID=011,FID=*

            -OR-

        ATTACH,IN.....   (MANUAL TO BE PROCESSED)
        BEGIN,UTILITY,,MANUAL,,*,OUT.   * IS REVISION NUMBER
        ROUTE,OUT,DC=PR,....   (TO NARROW PAPER)

    EXECUTE CARD PARAMETERS
        MANUAL,INFILE,REVNO,OUTPUT.
            INFILE - INPUT FILE CONTAINING THE MANUAL
            REVNO   - DESIRED REVISION NUMBER (1 DIGIT)
                      (ALL REVISIONS HIGHER THAN THIS NUMBER ARE
                      ALSO EXTRACTED)
            OUTPUT - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        MANUAL,IN,0,OUTPUT.   (ENTIRE MANUAL. NOT EFFICIENT.
                                  SEE REMARKS.)

    DEFAULT PL: 20000 LINES

    FL NEEDED TO LOAD: 30000B
    FL NEEDED TO RUN : 16000B

ERROR MESSAGES
    INPUT FILE EMPTY
        THE INPUT FILE CONTAINS NO INFORMATION.

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
                IN   INPUT FILE CONTAINING THE MANUAL
                OUTPUT   LISTABLE OUTPUT

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   FILESQ   GET   IFETCH
        OPENM   PUT
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R11FMT   R12FMT
    OTHERS
        DIGIT   - TEST FOR DIGIT
        TOPAGE - TEST FOR TOP-OF-PAGE

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 08/22/79

DATE(S) REVISED
    09/28/79 - PUT TOTAL NUMBER OF PAGES PRINTED INTO DAYFILE

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'MANYDOC'

PURPOSE
EXTRACT (PRINT) TWO OR MORE DOCUMENTS FROM A DOCUMENT FILE

FUNCTIONAL CATEGORIES: S0 Q6

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
DOCUMENTS MAY BE REQUESTED IN ANY ORDER BUT WILL BE PRINTED
IN THE ORDER IN WHICH THEY OCCUR IN THE FILE.
DOCUMENTATION FILE IS COMPATIBLE WITH AN UPDATE 'SOURCE'
FILE OF *DECK'S ONLY.
TO EXTRACT ONLY ONE DOCUMENT, USE PROGRAM 'PROGDOC'.

EXECUTION
FROM BATCH
    ATTACH,UTILITY.
    LIBRARY,UTILITY.
    MANYDOC,LIBRARY,ID,,OUTPUT.
    '   7/8/9   EOR
        (DATA CARDS)
    "   6/7/8/9   EOF

FROM TTY
    CONNECT,TTY
    BEGIN,UTILITY,,MANYDOC,LIBRARY,ID,TTY,OUT,,OUT.
        (ENTER DATA CARDS - THERE IS NO PROMPTING)
        (END WITH PERCENT EOF)
    ROUTE,OUT,DC=PR,....

EXECUTE CARD PARAMETERS
    MANYDOC,LIBRARY,ID,INPUT,OUTFILE,LEFT,OUTPUT,DOCFILE,
    DECK.   (MUST FIT ON ONE CARD)
        LIBRARY - FIRST PART OF DOCUMENTATION FILE PFN.
                  FULL PFN IS LIBRARY_DOCUMENTATION.
        ID   - ID UNDER WHICH DOCUMENTATION IS CATALOGED
                  (DEFAULT: SYSTEM PUBLIC ACCESS ID)
        INPUT   - INPUT DATA CARDS
        OUTFILE - OUTPUT FILE OF SELECTED DOCUMENTS
                  (NOT REWOUND)
        LEFT   - PRINT CENTERING
                  OMITTED OR 'LEFT' - LEFT-JUSTIFIED ON PAGE
                  OTHER   - CENTERED ON LARGE PAGE
                  (DEFAULT: LEFT-JUSTIFIED)
        OUTPUT - SUMMARY OF REQUESTS
                  (MAY BE SAME AS OUTFILE)
        DOCFILE - IF THE USER HAS PREVIOUSLY ATTACHED A
                  DOCUMENTATION FILE, PLACE LFN HERE AND OMIT
                  THE FIRST 2 PARAMETERS ('LIBRARY' AND 'ID').
                  WHEN THIS PARAMETER IS USED AND IS NOT
                  'ZZDOC', THE FILE IS NOT RETURNED AT END OF
                  EXECUTION.
        DECK   - OMITTED OR NO - NO *DECK CARDS
                  OTHER   - *DECK CARDS COPIED

```
DEFAULT EXECUTE CARD
    MANYDOC,*,*----*,INPUT,TAPE1,LEFT,OUTPUT,ZZDOC,NO.

DEFAULT PL: 15000 LINES

FL NEEDED TO LOAD: 36000B
FL NEEDED TO RUN : 26000B MINIMUM
    (PROGRAM ADJUSTS CORE AS REQUIRED)

DATA CARDS
    COL     CONTENTS
    -----   --------
    1-7     NAME OF DESIRED DOCUMENT

ERROR MESSAGES
    DOCUMENT FILE EMPTY
        FILE WAS FOUND BUT CONTAINED NO INFORMATION

    DOCUMENT FILE NOT FOUND
        REQUESTED DOCUMENTATION FILE IS NOT IN THE SYSTEM

    NO DOCUMENTS FOUND
        NONE OF THE REQUESTED DOCUMENTS WAS IN THE FILE

    NO DOCUMENTS REQUESTED
        NO DATA CARDS WERE ENCOUNTERED

INPUT/OUTPUT UNITS
    UNIT  #     LFN                         USE
    -------     -------     ---------------------------------------------
                INPUT       DATA CARD INPUT FILE
                OUTPUT      LISTABLE OUTPUT (SUMMARY OF REQUESTS)
                TAPE1       OUTPUT FILE OF SELECTED DOCUMENTS
                            (NOTE: OUTPUT AND TAPE1 MAY BE THE SAME
                            FILE)
                ZRECORD     PERMANENT RECORD OF REQUEST
                            (ATTACHED AND RETURNED WITHIN PROGRAM)
                ZZDOC       FILE CONTAINING DOCUMENTATION
                            (ATTACHED AND RETURNED WITHIN PROGRAM)
                            (IF USER REPLACES THE FILE NAME AT
                            EXECUTION TIME, THE FILE IS ASSUMED TO
                            BE ATTACHED AND WILL NOT BE RETURNED)

EXAMPLE
    PRINT DOCUMENTATION FOR PROGRAMS 'MANYDOC' AND 'PROGDOC':
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        MANYDOC,UTILITY,,,OUTPUT.
        '   7/8/9       EOR
        MANYDOC
        PROGDOC
        "   6/7/8/9     EOF
```

```
SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND         CLOSEM      DATE        EOF         FILESQ
        GET         IFETCH      MOVLEV      OPENM       PUT
        RECOVR      REMARK      SHIFT       TIME
    PART OF PROGRAM
        CLOSFIL  - CLOSE FILES
        COPYDEK  - COPY ONE DOCUMENT
        EOJ      - ABNORMAL TERMINATION ROUTINE
        FINDECK  - LOCATE NEXT *DECK CARD
        GETFIL   - ATTACH.DOCUMENTATION FILE
        GETIN    - READ INPUT DATA CARDS
        RECORD   - MAKE PERMANENT RECORD OF REQUESTS
    OTHERS
        CPU467   - GET CPU PROGRAM IS RUNNING ON
        DVSORTA  - SORT ARRAY
        FINDWRD  - SEARCH ARRAY FOR WORD
        GETLFNS  - GET ACTUAL LOCAL FILE NAMES
        IDID     - GET USER ID
        IPAKLFT  - SQUEEZE LEFT AND REMOVE BLANKS
        ISUMIT   - SUM INTEGER ARRAY
        LASTC    - FIND LAST NON-BLANK
        MOVSTR   - MOVE CHARACTER STRING
        PUTCHA   - INSERT CHARACTER
        REDUCE   - ADJUST CORE UP AND DOWN
        REQUEST  - CALLABLE REQUEST
        VFILL    - FILL ARRAY WITH WORD
        ZPFUNC   - CALLABLE PF FUNCTIONS

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ. ZERO-FILLED)
        L11FMT      L61FMT      L71FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R51FMT      R56FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/28/77

DATE(S) REVISED
    05/05/77 - ADD CPU TO PERMANENT RECORD
    02/02/78 - ADD DECK OPTION

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'MTDOC'

PURPOSE
    CREATE DOCUMENTATION TO DESCRIBE THE CONTENTS OF A MAGNETIC
    TAPE

FUNCTIONAL CATEGORIES: Q6

REMARKS
    IF ANY QUESTION IS ANSWERED WITH A SINGLE ENTRY OF   ? , A
    LONG(ER), MORE DETAILED DESCRIPTION OF THE CURRENT ITEM
    IS TYPED.

    IF ANY QUESTION (EXCEPT FOR *DECK CARDS AND UNDERLINE
    CHARACTER) IS ANSWERED WITH A SINGLE ENTRY OF (, THE
    CURRENT DOCUMENT IS TERMINATED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CONNEC   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        ANYMOR   - ASK IF ANY MORE DOCUMENTS TO BE CREATED
        CONTACT - ASK FOR PERSON TO CONTACT ABOUT THIS TAPE
        DECK1   - ASK IF *DECK CARDS DESIRED
        DENS   - ASK FOR TAPE DENSITY INFORMATION
        ECHO1   - ASK IF ECHO DESIRED
        ENDIT   - CLOSE PROGRAM AND PRINT SUMMARY
        EOJ   - ABNORMAL TERMINATION ROUTINE
        GET13   - GET VARIABLE LENGTH INFO AND PRINT IN COL 13
        LABL   - ASK FOR TAPE LABEL
        PRMPT   - ASK IF LONG/SHORT PROMPTING DESIRED
        REM   - ASK FOR ANY REMARKS
        RETENT   - ASK FOR RETENTION PERIOD
        TAPLOC   - ASK FOR TAPE LOCATION (6700 ROOM, ETC)
        TAPNO   - ASK FOR TAPE NUMBER (CA9999, ETC)
        TCREATE - ASK FOR CREATION DATE
        TDESCR   - ASK FOR DESCRIPTION OF TAPE CONTENTS
        TRUNC   - PRINT TRUNCATED MESSAGE
        UNDER1   - ASK WHICH UNDERLINE CHARACTER DESIRED
    OTHERS
        ELTIME   - TIMING ROUTINE
        FSETFIT - SET FTN FIT VALUES
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        IFMTV   - FAST VARIABLE LENGTH I-FORMAT DECODE
        JULIAN   - GREGORIAN/JULIAN DATE CONVERTER (SINGLE-YEAR)
        PAKLFT   - SQUEEZE LEFT AND REMOVE BLANKS AND 00B
        REQUEST - REQUEST,DOCMNT,*PF.
        TRAILBZ - CHANGE TRAILING BLANKS TO 00B

```
ARITHMETIC STATEMENT FUNCTIONS
    FAST I-FORMAT DECODE
        I11FMT
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT      L14FMT      L22FMT      L25FMT      L61FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R13FMT      R56FMT

LANGUAGE: FORTRAN IV

METHOD
    TTY IS PROMPTED FOR EACH SECTION OF THE DOCUMENT.

INPUT/OUTPUT UNITS
    UNIT  #      LFN                             USE
    -------      -------      ----------------------------------------
       1         ZZTTYI       TTY INPUT
       4         DOCMNT       CREATED DOCUMENTS (ON PF SPACE)
       5         ZZTTYO       TTY PROMPTER
                 OUTPUT       FTN ERROR MESSAGES
EXECUTION
    FROM BATCH
        NOT DESIGNED FOR BATCH USE

    FROM TTY
        BEGIN,UTILITY,,MTDOC.
            (TTY IS PROMPTED FOR ALL INPUT)
        CATALOG.DOCMNT,....        AND/OR        MODIFY USING EDITOR

    EXECUTE CARD PARAMETERS
        MTDOC.DOCMNT,QUICK.
            DOCMNT  - CREATED DOCUMENT(S)
                      (MAY BE CATALOGED)
            QUICK   - 'Q'    - DO NOT PRINT INITIAL DESCRIPTION:
                               GIVE SHORT PROMPT FOR FIRST
                               QUESTIONS
                      OTHER - PRINT INITIAL DESCRIPTION AND LONG
                               PROMPTING FOR FIRST QUESTIONS
                      NOTE: OMIT UNTIL YOU ARE USED TO THE
                            PROGRAM, THEN USE Q.

    DEFAULT EXECUTE CARD
        MTDOC,DOCMNT.

    FL NEEDED TO LOAD: 35000B
    FL NEEDED TO RUN : 25000B
```

DATA
    THE FOLLOWING INFORMATION IS REQUESTED ONCE PER EXECUTION:
        1 - DO YOU WANT UPDATE *DECK CARDS GENERATED BEFORE EACH
            DOCUMENT? ENTER Y FOR YES, N FOR NO.
        2 - WHICH UNDERLINE CHARACTER DO YOU WANT?
            ENTER 1 FOR UNDERSCORE (_) OR 2 FOR HYPHEN (-).

    THE FOLLOWING INFORMATION IS REQUESTED FOR EACH DOCUMENT:
        3 - DO YOU WANT ALL ENTRIES ECHOED? (Y FOR YES, N FOR NO
        4 - DO YOU WANT THE LONG OR SHORT FORM OF THE PROMPTING
            MESSAGES? ENTER L FOR LONG, S FOR SHORT.
        5 - TAPE NUMBER (1-6 CHARACTERS) (E.G., CA9999)
        6 - TAPE LABEL (4-7 CHARACTERS; BLANK FOR UNLABELLED)
        7 - DENSITY INFORMATION (6 CHARACTERS, AS FOLLOWS)
                1   - 7 (FOR 7-TRACK) OR 9 (FOR 9-TRACK)
                2-3 - DENSITY (LO, HI, HY, HD)
                4   - S/L/BLANK (FOR STRANGER/LONG/SCOPE)
                5-6 - EB/BLANK (EB ON 9-TRACK ONLY)
                (DEFAULT: '7HY   ')
        8 - LOCATION OF TAPE
            4/6/7 FOR 6400/6600/6700 ROOM OR
            DESCRIBE THE LOCATION (1-53 CHARACTERS)
        9 - CREATION DATE (WHEN LABEL WAS WRITTEN; MAY BE YYDDD
            OR MM/DD/YY
        10 - RETENTION PERIOD (AS SPECIFIED ON LABEL CARD) (1-999
            DAYS OR BLANK (7 DAYS) (LEFT-JUSTIFIED))
        11 - NAME OF PERSON RESPONSIBLE FOR CONTENTS OF TAPE
            ANY NUMBER OF 1- TO 60-CHARACTER LINES. END WITH A
            SINGLE ENTRY OF SEMI-COLON (:).
        12 - REMARKS. USE THIS SECTION FOR ANY REMARKS ABOUT THE
            TAPE OR ITS CONTENTS. YOU MAY WANT TO GIVE THE TAPE
            HISTORY. NOTE: TAPE CONTENTS IS ENTERED IN RESPONSE
            TO THE NEXT QUESTION. ANY NUMBER OF 1- TO
            60-CHARACTER LINES. END WITH A SINGLE ENTRY OF
            SEMI-COLON (:).
        13 - TAPE CONTENTS. ANY NUMBER OF 1- TO 60-CHARACTER
            LINES. END WITH A SINGLE ENTRY OF SEMI-COLON (:).
            HEADINGS ARE PROVIDED FOR FILE NUMBER, RECORD NUMBER
            AND CONTENTS OF THE RECORD.
        14 - END OF DOCUMENT. DO YOU WANT TO DO ANOTHER?
            (Y FOR YES, N FOR NO)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 06/18/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'NEWNAME'

PURPOSE
    RENAME A SIMPLE ABSOLUTE MODULE

FUNCTIONAL CATEGORIES: K3

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    AT PRESENT, THIS PROGRAM WILL HANDLE ONLY THE FOLLOWING
    TYPES OF OBJECT MODULES:
        1) SIMPLE (NON-OVERLAY, NON-SEGLOAD) ABSOLUTE
           (CREATED BY NOGO,ABSLFN)

    ONLY THE FIRST LOGICAL RECORD IS PROCESSED.

    RESULTS ARE NOT PREDICTED WHEN USED ON RELOCATABLE MODULES
    OR OTHER TYPES OF ABSOLUTES.

EXECUTION
    FROM BATCH AND TTY
        ATTACH,TAPE1.....   (ABSOLUTE MODULE TO BE RENAMED
        BEGIN,UTILITY,,NEWNAME..,*.   * IS NEW NAME
        (TAPE2 HAS THE RENAMED MODULE)

    EXECUTE CARD PARAMETERS
        NEWNAME,INFILE,OUTFILE,NAME,OUTPUT.
            INFILE   - INPUT FILE CONTAINING MODULE TO BE RENAMED
            OUTFILE - OUTPUT FILE CONTAINING RENAMED MODULE
            NAME   - NEW NAME (ANYTHING EXCEPT 'ZYXWVU')
            OUTPUT   - LISTABLE OUTPUT (FTN ERROR MESSAGES)

    DEFAULT EXECUTE CARD
        NEWNAME,TAPE1,TAPE2,*,OUTPUT.
            (* - USER MUST SUPPLY)

    DEFAULT PL: 5000 LINES

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B

DAYFILE MESSAGES
    INPUT FILE EMPTY
        INPUT FILE CONTAINS NO INFORMATION

    INPUT NOT BINARY MODULE
        INPUT DOES NOT BEGIN WITH 7700 TABLE. PROBABLY A SOURCE
        OR DATA FILE.

    PARAM 3 (NEW NAME) OMITTED
        USER DID NOT SPECIFY A NEW NAME

UNEXPECTED EOI ENCOUNTERED
    EOI ENCOUNTERED BEFORE EOR - SHOULD NEVER OCCUR

XXXXXXX CHANGED TO ZZZZZZZ
NNNNN PRU(S) COPIED
    SUMMARY OF PROCESSING

INPUT/OUTPUT UNITS
    UNIT #   LFN   USE
    -------   -------   --
                TAPE1   INPUT FILE CONTAINING MODULE TO BE
                            RENAMED (REWOUND BEFORE AND AFTER USE)
                TAPE2   OUTPUT FILE CONTAINING RENAMED MODULE
                            (REWOUND BEFORE AND AFTER USE)
                DAYFILE   MESSAGES

METHOD
    WORD TABLE+1 OF THE PREFIX TABLE (7700) IS CHANGED.
    (IF THERE IS A 54 TABLE, THE FIRST ENTRY NAME IS CHANGED IN
    WORD TABLE+8). WORD TABLE+10 MAY ALSO BE CHANGED.
    IF NO 7700 TABLE, NOT AN OBJECT MODULE.
    IF NOT ABSOLUTE MODULE, RESULTS ARE UNPREDICTABLE.
    ONLY FIRST LOGICAL RECORD IS PROCESSED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CLOSEM   FILESQ   GET   IFETCH
        OPENM   PUT   RECOVR   REMARK   WEOR
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        REPLAC - REPLACE ONE CHARACTER WITH ANOTHER

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L31FMT   L71FMT   L81FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO FILLED)
        R21FMT   R38FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/10/77

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'PAGEPRT'

PURPOSE
  PRINT SELECTED PAGE(S) FROM A DOCUMENT

FUNCTIONAL CATEGORIES: SO 01

REMARKS
  IF MORE THAN ONE PAGE REQUESTED, THEY MUST BE IN ORDER,
  AS THE DOCUMENT FILE IS SEARCHED ONLY ONCE.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
  PART OF LANGUAGE
     CLOSEM   EOF   FILESQ   GET   IFETCH
     OPENM   RECOVR   REMARK   SHIFT
  PART OF PROGRAM
     EOJ   - ABNORMAL TERMINATION ROUTINE
  OTHERS
     GETLFNS - GET ACTUAL LOCAL FILE NAMES
     IOPEN   - TEST FOR RM FILE OPEN
     REPLAC - REPLACE ONE CHARACTER WITH ANOTHER
     SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
  A105FMT - FAST A-FORMAT DECODE
  L11FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
  L71FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

METHOD
  HEADER LINES ('1' IN COLUMN ONE) ARE SEARCHED FOR
  'PAGE' IN COLUMNS 60-63. THE PAGE NUMBER MUST BE IN
  COLUMNS 65-74. LINES ARE COPIED UNTIL A NEW HEADER
  LINE IS ENCOUNTERED.

  END-OF-RECORD IS IGNORED; END-OF-FILE OR END-OF-INFORMATION
  WILL END THE PROGRAM.

INPUT/OUTPUT UNITS
  UNIT #   LFN   USE
  --------   --------   --
     5   INPUT   OPTIONAL DATA CARDS
             CCRM   INPUT DOCUMENT FILE
             OUTPUT   LISTABLE OUTPUT

EXECUTION
  FROM BATCH
     ATTACH,UTILITY.
     ATTACH,TAPE1,.....   (DOCUMENT FILE)
     LDSET,LIB=UTILITY.
     PAGEPRT,.....
     7/8/9
        (DATA CARDS. IF NONE, NO 7/8/9 IS REQUIRED)
     6/7/8/9

```
FROM TTY
    ATTACH,TAPE1,....        (DOCUMENT FILE)
    ATTACH,UTILITY.
    LIBRARY,UTILITY.
    PAGEPRT,TAPE1,0,OUT,R,$1-14$.       (PRINT PAGE 1-14)
    ROUTE,OUT,DC=PR,....

        --OR--

    ATTACH,TAPE1,....        (DOCUMENT FILE)
    ATTACH,UTILITY.
    LIBRARY,UTILITY.
    CONNECT,INPUT.
    PAGEPRT,TAPE1,0,OUT.
        (ENTER PAGE NUMBERS, ONE AT A TIME, END WITH
        PERCENT EOF)
    ROUTE,OUT,DC=PR,....

EXECUTE CARD PARAMETERS
    PAGEPRT,INFILE,ID,OUTPUT,REW,PAGE,INPUT.
        INFILE  - INPUT DOCUMENT FILE
                  ONE OF:
                  .1-7 CHARACTER PFN OF DOCUMENT FILE TO BE
                   ATTACHED BY PROGRAM;
                  .1-7 CHARACTER LFN OF ALREADY ATTACHED FILE;
                  .OMITTED FOR COMPUTER CENTER REFERENCE
                   MANUAL.
        ID      - ONE OF:
                  .ID OF DOCUMENT FILE TO BE ATTACHED BY PROGR
                   PROGRAM;
                  .0, IF DOCUMENT FILE ALREADY ATTACHED;
                  .OMITTED FOR COMPUTER CENTER REFERENCE
                   MANUAL, OR ANY OTHER FILE WITH SYSTEM
                   PUBLIC ACCESS ID.
        OUTPUT  - LISTABLE OUTPUT
        REW     - INFILE REWIND OPTION
                  A     - REWIND AFTER USE
                  B     - REWIND BEFORE USE
                  R     - REWIND BEFORE AND AFTER USE
                          (DEFAULT)
                  U     - REWIND BEFORE, REWIND AND UNLOAD
                          AFTER USE (FORCED IF BOTH INFILE AND
                          ID OMITTED)
                  OTHER - NO REWIND
                  (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                  PRODUCE THE SAME RESULTS)
        PAGE    - IF OMITTED, PAGE NUMBERS READ FROM FILE
                  INPUT.
                  IF SPECIFIED, THIS IS A 1-7 CHARACTER PAGE
                  NUMBER (ENCLOSE IN $ IF ANY SPECIAL
                  CHARACTERS).
        INPUT   - DATA CARD INPUT FILE.  USED ONLY IF PAGE
                  PARAMETER OMITTED.
```

```
DEFAULT EXECUTE CARD
    PAGEPRT,*,**,OUTPUT,REWIND,,INPUT.
        *  - COMPUTER CENTER REFERENCE MANUAL
        ** - SYSTEM PUBLIC ACCESS ID

FL NEEDED TO LOAD: 32000B
FL NEEDED TO RUN : 23000B

DATA CARDS (ONLY IF PAGE PARAMETER OMITTED)
    COL     CONTENTS
    -----   --------
    1-10    PAGE NUMBER

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 02/09/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'PFDOC'

PURPOSE
    CREATE PERMANENT FILE DOCUMENTATION

FUNCTIONAL CATEGORIES: Q6

REMARKS
    IF ANY QUESTION IS ANSWERED WITH A SINGLE ENTRY OF   ?   , A
    LONG(ER), MORE DETAILED DESCRIPTION OF THE CURRENT ITEM
    IS TYPED.

    IF ANY QUESTION (EXCEPT FOR *DECK CARDS AND UNDERLINE
    CHARACTER) IS ANSWERED WITH A SINGLE ENTRY OF   @   , THE
    CURRENT DOCUMENT IS TERMINATED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   CONNEC   DATE   EOF   MINO
        MOVLEV   OR   RECOVR   REMARK   SHIFT
    PART OF PROGRAM
        AC   - ASK FOR ACCOUNT NUMBER (AC)
        ANYMOR   - ASK IF ANY MORE DOCUMENTS TO BE CREATED
        BACKUP   - ASK WHERE BACKUPS ARE
        CY   - ASK FOR CYCLE
        DATES   - ASK FOR DATE CREATED, BY WHOM AND WHEN REVISED
        DECK1   - ASK IF *DECK CARDS DESIRED
        DESCR   - ASK FOR DESCIPTION OF THE PERMANENT FILE
        ECHO1   - ASK IF ECHO DESIRED
        ENDIT   - CLOSE PROGRAM AND PRINT SUMMARY
        EOJ   - ABNORMAL TERMINATION ROUTINE
        FMT   - ASK FOR FILE FORMAT
        GETPFN   - ASK FOR PERMANENT FILE NAME
        GET14   - GET VARIABLE LENGTH INFO AND PRINT IN COL 14
        GET18   - GET VARIABLE LENGTH INFO AND PRINT IN COL 18
                    (ENTRY IN GET14)
        GET29   - GET VARIABLE LENGTH INFO AND PRINT IN COL 29
                    (ENTRY IN GET14)
        ID   - ASK FOR ID FILE IS CATALOGED UNDER
        PASS   - ASK FOR PASSWORDS
        PRMPT   - ASK IF LONG/SHORT PROMPTING DESIRED
        TRUNC   - PRINT TRUNCATED MESSAGE
        UNDER1   - ASK WHICH UNDERLINE CHARACTER DESIRED
        WHERE   - ASK WHERE WRITEUP AND LISTING ARE
    OTHERS
        ELTIME   - TIMING ROUTINE
        FINDWRD   - SEE IF WORD IN IN ARRAY
        FSETFIT   - SET FTN FIT VALUES
        GETLFNS   - GET ACTUAL LOCAL FILE NAMES
        REPLAC   - REPLACE ONE CHARACTER WITH ANOTHER
        UNLOAD   - RETURN FILES
        ZBLANK   - CHANGE BLANKS TO 00B AND VICE VERSA

ARITHMETIC STATEMENT FUNCTIONS
    R110FMT - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

METHOD
    TTY IS PROMPTED FOR EACH SECTION OF THE DOCUMENT.

    ALL SECTIONS ARE ALWAYS ASKED FOR EXCEPT THAT WHEN AN XR
    PASSWORD IS GIVEN, THE CN, EX, MD PASSWORDS ARE NOT
    REQUESTED.

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
1	ZZTTYI	TTY INPUT
4	DOCMNT	CREATED DOCUMENTS (ON PF SPACE)
5	ZZTTYO	TTY PROMPTER
	OUTPUT	FTN ERROR MESSAGES

EXECUTION
    FROM BATCH
        NOT DESIGNED FOR BATCH USE

    FROM TTY
        BEGIN,UTILITY,,PFDOC.
            (TTY IS PROMPTED FOR ALL INPUT)
        CATALOG,DOCMNT,.....   AND/OR   MODIFY USING EDITOR

    EXECUTE CARD PARAMETERS
        PFDOC,DOCMNT.QUICK.
            DOCMNT - CREATED DOCUMENT(S)
                      (MAY BE CATALOGED)
            QUICK   - 'Q'   - DO NOT PRINT INITIAL DESCRIPTION:
                              GIVE SHORT PROMPT FOR FIRST
                              QUESTIONS
                      OTHER - PRINT INITIAL DESCRIPTION AND LONG
                              PROMPTING FOR FIRST QUESTIONS
                      NOTE: OMIT UNTIL YOU ARE USED TO THE
                            PROGRAM, THEN USE Q.

    DEFAULT EXECUTE CARD
        PFDOC,DOCMNT.

    FL NEEDED TO LOAD: 37000B
    FL NEEDED TO RUN : 30000B

DATA
THE FOLLOWING INFORMATION IS REQUESTED ONCE PER EXECUTION:
   1 - DO YOU WANT UPDATE *DECK CARDS GENERATED BEFORE EACH
       DOCUMENT? ENTER Y FOR YES, N FOR NO.
       (THE DECK NAME WILL BE THE FIRST 7 CHRACTERS OF
       THE PFN)
   2 - WHICH UNDERLINE CHARACTER DO YOU WANT?
       ENTER 1 FOR UNDERSCORE (_) OR 2 FOR HYPHEN (-).

THE FOLLOWING INFORMATION IS REQUESTED FOR EACH DOCUMENT:
   3 - DO YOU WANT ALL ENTRIES ECHOED? (Y FOR YES, N FOR NO)
   4 - DO YOU WANT THE LONG OR SHORT FORM OF THE PROMPTING
       MESSAGES? ENTER L FOR LONG, S FOR SHORT.
   5 - PFN (1-40 CHARACTERS)
   6 - ID (1-9 CHARACTERS)
   7 - AC (10 CHARACTERS)
   8 - CY (1-3 DIGITS)
   9 - TURNKEY PASSWORD (TK) (1-9 CHARACTERS)
  10 - READ PASSWORD (RD) (1-9 CHARACTERS)
  11 - READ ONLY (XR) PASSWORD (1-9 CHARACTERS)
       IF XR IS BLANK, ASK FOR THE NEXT 3 PASSWORDS
  12 - CONTROL PASSWRD (CN) (1-9 CHARACTERS)
  13 - EXTEND PASSWORD (EX) (1-9 CHARACTERS)
  14 - MODIFY PASSWORD (MD) (1-9 CHARACTERS)
  15 - SPECIAL PASSWORD (1-9 CHARACTERS)
       (REQUESTED ONLY IF ID IS PPUBLIC ACCESS ID)
  16 - FILE FORMAT. THERE ARE 12 RECOGNIZED ABBREVIATIONS
       AND PROVISION FOR USER-SPECIFIED DESCRIPTION.
       TO FIND CURRENT LIST, ANSWER ? TO THIS QUESTION.
  17 - DATE FILE CREATED. ENTER MM/DD/YY OR ENTER
       SEMI-COLON (:) FOR TODAY.
  18 - NAME OF PERSON WHO CREATED THE FILE
       (1-30 CHARACTERS)
  19 - DATES THE FILE WAS REVISED (EXTENDED OR MODIFIED).
       ANY NUMBER OF 1-55 CHARACTER LINES. END WITH A
       SINGLE ENTRY OF SEMI-COLON (:).
  20 - WHERE IS THE WRITEUP LOCATED?
       ANY NUMBER OF 1-44 CHARACTER LINES. END WITH A
       SINGLE ENTRY OF SEMI-COLON (:).
  21 - WHERE IS THE LISTING LOCATED?
       ANY NUMBER OF 1-44 CHARACTER LINES. END WITH A
       SINGLE ENTRY OF SEMI-COLON (:).
  22 - WHAT BACKUP IS THERE FOR THE FILE AND WHERE IS IT?
       ANY NUMBER OF 1-59 CHARACTER LINES. END WITH A
       SINGLE ENTRY OF SEMI-COLON (:).
  23 - GIVE A DESCRIPTION OF THE FILE.
       ANY NUMBER OF 1-59 CHARACTER LINES. END WITH A
       SINGLE ENTRY OF SEMI-COLON (:).
  24 - END OF DOCUMENT. DO YOU WANT TO DO ANOTHER?
       (Y FOR YES, N FOR NO)

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATA WRITTEN: 12/04/73 (ORIGINALLY CALLED 'SDOC')

DATE(S) REVISED
    12/12/73
    01/09/74
    01/15/76 (NAME CHANGED TO 'PFDOC')
    07/07/76 - 1) CHANGE TERMINATE CHARACTER TO @.
              2) ADD QUICK OPTION.
              3) REMOVE CENTERED LISTABLE OUTPUT.
              4) ADD 'D' (DOCUMENTATION FILE) TO TYPES OF FILE
                 FORMATS.
              5) REMOVE ABILITY TO LIST FINAL DOCUMENT(S) AT
                 TTY.
              6) ADD RESPONSE LENGTHS TO PROMPTING MESSAGES.

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

```
PROGRAM 'PROGDOC'

PURPOSE
    EXTRACT (PRINT) ONE OR ALL DOCUMENT(S) FROM A DOCUMENT FILE

FUNCTIONAL CATEGORIES:  Q6   S0

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    DOCUMENT FILE IS COMPATIBLE WITH AN UPDATE 'SOURCE' FILE
    OF *DECK'S ONLY.

EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        PROGDOC,LIBRARY,ID,PROGNAME.

    FROM TTY
        BEGIN,UTILITY,,PROGDOC,LIBRARY,ID,PROGNAME,OUT.
        DISPOSE,OUT,PR=XYY.

    EXECUTE CARD PARAMETERS
        PROGDOC,LIBRARY,ID,ROUTINE,OUTPUT,LEFT,DOCFILE,DECK.
            LIBRARY - NAME OF LIBRARY CONTAINING ROUTINE FOR WHICH
                      DOCUMENTATION IS DESIRED
                      MAY BE ONE OF:
                          NSRDC
                          UTILITY (DEFAULT)
                          ANY OTHER LIBRARY NAME (1-7 CHAR)
                      PROGRAM WILL ATTACH AND RETURN THE
                      DOCUMENTATION FILE.  THE PFN USED WILL BE
                      THE LIBRARY NAME SPECIFIED, FOLLOWED BY
                      'DOCUMENTATION'   (DEFAULT IS
                      'UTILITYDOCUMENTATION')
            ID      - ID UNDER WHICH DOCUMENTATION IS CATALOGED
                      (DEFAULT IS THE SYSTEM PUBLIC ACCESS ID)
            ROUTINE - NAME OF ROUTINE FOR WHICH DOCUMENTATION
                      IS DESIRED
                      ('ALL' TO PRINT ALL DOCUMENTATION)
                      (DEFAULT IS 'NONE')
            OUTPUT  - LISTABLE OUTPUT
            LEFT    - PRINT CENTERING
                      MISSING OR 'LEFT' - LEFT-JUSTIFIED ON PAGE
                      OTHER             - CENTERED ON LARGE PAGE
                      (DEFAULT IS LEFT-JUSTIFIED)
            DOCFILE - IF USER HAS PREVIOUSLY ATTACHED A
                      DOCUMENTATION FILE, PLACE LFN HERE AND OMIT
                      THE FIRST 2 PARAMETERS ('LIBRARY' AND 'ID').
                      WHEN THIS PARAMETER IS USED AND IS NOT
                      'ZZDOC', THE FILE IS NOT RETURNED AT END OF
                      EXECUTION.
            DECK    - OMITTED OR NO - NO *DECK CARDS
                      OTHER         - OUTPUT *DECK CARDS
```

```
DEFAULT EXECUTE CARD
    PROGDOC,UTILITY,*---*,NONE,OUTPUT,LEFT,TAPE1,ZZDOC.

DEFAULT PL: 50000 LINES

FL NEEDED TO LOAD: 32000B
FL NEEDED TO RUN : 22000B

FORMAT OF THE DOCUMENTATION FILE
    THE FIRST RECORD OF EACH DOCUMENT IDENTIFIES IT
        COL     CONTENTS
        -----   --------
        1-5     *DECK
         6      BLANK
        7-13    DOCUMENT NAME
                (1-7 CHARACTERS,
                NO EMBEDDED BLANKS OR SPECIAL CHARACTERS)

    EACH DOCUMENT IS COMPOSED OF RECORDS OF THE FOLLOWING FORM:
        COL     CONTENTS
        -----   --------
         1      CARRIAGE CONTROL
        2-80    LINE OF DOCUMENT

ERROR MESSAGES
    ABEND
        JOB ABORTED

    DOCUMENT FILE NOT FOUND
        REQUESTED FILE <LIB>_DOCUMENTATION.ID=<ID> NOT IN SYSTEM

    <DOCUMNT> NOT FOUND
        REQUESTED DOCUMENT IS NOT IN THE FILE

    ERROR TRYING TO ATTACH
    DOCUMENT FILE - RETURN CODE IS <RC>B
        CONTACT USER SERVICES

    FILE ALREADY ATTACHED
        REQUESTED DOCUMENT FILE IS ALREADY ATTACHED

    FILE UNAVAILABLE
        CANNOT ATTACH REQUESTED DOCUMENT FILE

    LFN ALREADY IN USE
        RETURN,ZZDOC. AND TRY AGAIN

    NO DOCUMENT REQUESTED
        THIRD EXECUTE CARD PARAMETER WAS NOT SPECIFIED
```

```
INPUT/OUTPUT UNITS
    UNIT  #     LFN                              USE
    -------    -------    ------------------------------------------
               OUTPUT     LISTABLE OUTPUT
               ZRECORD    PERMANENT RECORD OF REQUEST
                          (ATTACHED AND RETURNED WITHIN PROGRAM)
               ZZDOC      FILE CONTAINING DOCUMENTATION
                          (ATTACHED AND RETURNED WITHIN PROGRAM)
                          (IF THE USER REPLACES THE FILE NAME AT
                          EXECUTION TIME, THE FILE IS ASSUMED TO
                          BE ATTACHED AND WILL NOT BE RETURNED)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND        CLOSEM     DATE       FILESQ     GET
        IFETCH     OPENM      OR         PUT        RECOVR
        REMARK     SHIFT      STOREF     TIME
    PART OF PROGRAM
        EOJ      - ABNORMAL TERMINATION ROUTINE
        RECORD   - WRITE PERMANENT RECORD OF REQUEST
    OTHERS
        GETLFNS  - GET ACTUAL LOCAL FILE NAMES
        IDID     - GET USER ID
        IPAKLFT  - SQUEEZE BLANKS AND ZEROS OUT OF PFN
        LASTC    - FIND LAST NON-BLANK/NON-00B CHARACTER
        MFX      - GET MACHINE PROGRAM IS RUNNING ON
        MOVSTR   - MOVE CHARACTER STRING
        REPLAC   - REPLACE ONE CHARACTER WITH ANOTHER
        REQUEST  - REQUEST,ZRECORD,*PF.
        UNLOAD   - RETURN,TAPE1.
        ZPFUNC   - ATTACH DOCUMENTATION FILE

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L11FMT     L61FMT     L77FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R92FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 01/27/75

DATE(S) REVISED
    03/26/75
    02/07/77 - CHANGE TO RECORD MANAGER: IMPROVE ERROR MESSAGE
    03/31/77 - ADD AND SET PERMANENT RECORD FLAG
    05/05/77 - ADD CPU TO PERMANENT RECORD
    02/03/78 - ADD DECK OPTION
    05/18/79 - INCREASE DEFAULT PL TO 50000

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'PROMNT'

PURPOSE
    MAINTAIN AN ALPHABETICAL, SEQUENTIAL PROCEDURE FILE, EACH
    PROCEDURE BEING ONE NOS/BE LOGICAL RECORD. BOTH CCL AND B/R
    PROCEDURES ARE SUPPORTED.

FUNCTIONAL CATEGORIES: Q4 SO K1

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    EACH PROCEDURE MUST BE ONE AND ONLY ONE LOGICAL RECORD.
    EMPTY RECORDS WILL BE FLAGGED IN THE LISTINGS (FCN= H, L, N,
    Q) AND REMOVED (WITH COUNT IN DAYFILE) IN MAINTENANCE (FCN=
    A, D, R).

EXECUTION
    FROM BATCH
        ATTACH.TAPE1,....   (INPUT PROCEDURE FILE)
        BEGIN.UTILITY,,PROMNT,....

    FROM TTY
        ATTACH.TAPE1,....   (INPUT PROCEDURE FILE)
        BEGIN,UTILITY,,PROMNT,,,,,,OUT.
        ROUTE,OUT,DC=PR,....

    EXECUTE CARD PARAMETERS
        PROMNT,INFILE,OUTFILE,FCN,NAME,ID,OUTPUT.
            INFILE   - INPUT PROCEDURE FILE
            OUTFILE - OUTPUT PROCEDURE FILE
                       (FOR FCN: A, D, G, R)
            FCN   - FUNCTION. ONE OF:
                       A OR ADD   - ADD PROCEDURE 'NAME'
                       D OR DELETE   - DELETE PROCEDURE 'NAME'
                       G OR GET   - EXTRACT PROCEDURE 'NAME'
                                       AND PUT ON 'OUTFILE'
                       H OR HEADERS - LIST PROCEDURE HEADERS
                       L OR LIST   - LIST ALL PROCEDURES (OR
                                       PROCEDURE 'NAME') EACH
                                       STARTING ON A NEW PAGE
                       N OR NAMES   - LIST PROCEDURE NAMES
                       Q   - QUICK LIST OF PROCEDURE NAMES
                                       (NO HEADINGS, SINGLE COLUMN)
                       R OR REPLACE - REPLACE PROCEDURE 'NAME'
            NAME   - ONE OF:
                       PROCEDURE NAME
                         (FOR FCN: G, L: IF OMITTED, ALL)
                       FILE CONTAINING NEW PROCEDURE
                         (FOR FCN: A, D, R)
            ID   - OPTIONAL ID FOR FCN: H, L, N.
                       IF SPECIFIED - HEADING HAS ID = XXXX.
                       IF OMITTED   - HEADING HAS LFN: INFILE.
            OUTPUT   - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        PROMNT.TAPE1.TAPE2.*.ALL..OUTPUT.
            * - USER MUST SPECIFY

```
FL NEEDED TO LOAD: 36000B
FL NEEDED TO RUN : 26000B
    (PROGRAM ADJUSTS CORE AS REQUIRED)

INPUT/OUTPUT UNITS
    UNIT #    LFN                                     USE
    -------  -------  ---------------------------------------------------
      4       ALL      NEW PROCEDURE INPUT FILE
              OUTPUT   LISTABLE OUTPUT
      1       TAPE1    INPUT PROCEDURE FILE
      2       TAPE2    OUTPUT PROCEDURE FILE
              DAYFILE  MESSAGE(S) ON WHAT WAS DONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND         BUFFERIN  BUFFEROUT CLOSEM    DATE
        FILESQ      GET       IFETCH    LENGTH    MOD
        MOVLEV      OPENM     OR        RECOVR    REMARK
        TIME        UNIT
    PART OF PROGRAM
        ADD      - ADD A PROCEDURE
        COPY     - COPY PROCEDURES
        DELETE   - DELETE A PROCEDURE
        EOJ      - ABNORMAL TERMINATION ROUTINE
        GETNAME  - EXTRACT PROCEDURE NAME FROM HEADER STATEMENT
        GETNEW   - GET PROCEDURE NAME FROM NEW PROCEDURE
        GETNEW1  - GET NEW PROCEDURE (ENTRY POINT IN GETNEW)
        GETPRO   - BUFFER IN ONE PROCEDURE
        GETPRO2  - BUFFER IN FIRST TWO WORDS OF A PROCEDURE
        GETT     - EXTRACT ONE PROCEDURE
        HEADERS  - LIST PROCEDURE HEADERS
        LIST     - LIST ONE OR ALL PROCEDURES
        NAMES    - LIST PROCEDURE NAMES
        PRTDEL   - PUT NUMBER OF EMPTY RECORDS DELETED IN DAYFILE
        PUTPRO   - BUFFER OUT ONE PROCEDURE
        QUICK    - QUICK LIST OF PROCEDURE NAMES (NO HEADINGS)
        REPL     - REPLACE A PROCEDURE
    OTHERS
        EXTPRM   - EXTRACT NEXT PARAMETER FROM STRING
        GETLFNS  - GET ACTUAL LOCAL FILE NAMES
        PUTCHA   - INSERT CHARACTER INTO ARRAY
        REDUCE   - ADJUST CORE AS REQUIRED
        REQUEST  - GET PF SPACE FOR OUTPUT FILE
        UNLOAD   - RETURN FILES
```

ARITHMETIC STATEMENT FUNCTIONS
    FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
        L41FMT   L51FMT   L61FMT   L71FMT   L77FMT
        L81FMT   L91FMT
    FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
        R47FMT
    OTHERS
        NROWS   - COMPUTE NUMBER OF ROWS IN PRINTOUT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 05/28/76

DATE(S) REVISED
    02/03/77 - PROCESS EMPTY RECORDS
    01/17/78 - MODIFY FOR CCL AND B/R

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'PRUDMP'

PURPOSE
   OCTAL AND CHARACTER DUMP OF DISK FILE BY RELATIVE PRU NUMBER

FUNCTIONAL CATEGORIES: J9 K3

REMARKS
   NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      CLOSEM   FILESQ   GETP   IFETCH   MAXO
      MOD   MOVLEV   OPENM   SHIFT   SKIP
      STOREF
   PART OF PROGRAM
      DMP   - DO ACTUAL PRINTING OF THE PRU
      EOJ   - ABNORMAL TERMINATION ROUTINE
      GETFMTS - DEFINE FORMATS FOR 'DMP'
   OTHERS
      GETLFNS - GET ACTUAL LOCAL FILE NAMES
      IFMTV   - FAST VARIABLE LENGTH I-FORMAT DECODE
      MFETCH - READ SPECIFIED WORD IN USER'S FL
      REPLACM - REPLACE MULTIPLE CHARACTERS IN AN ARRAY
      SETREW - DECODE REWIND OPTION

ARITHMETIC STATEMENT FUNCTIONS
   NONE

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	OUTPUT	LISTABLE OUTPUT
	TAPE1	FILE TO BE DUMPED

EXECUTION
   FROM BATCH
      ATTACH,TAPE1.....   DISK FILE TO BE DUMPED
      BEGIN,UTILITY,,PRUDMP,,....

   FROM TTY
      ATTACH,TAPE1.....   DISK FILE TO BE DUMPED
      BEGIN.UTILITY,,PRUDMP,,,,OUT.....
      ROUTE.OUT,DC=PR,....

EXECUTE CARD PARAMETERS
     PRUDMP,INFILE,START,NPRUS,OUTPUT,REW,SUP,CC,PRUS,WRDS.
          INFILE - INPUT FILE TO BE DUMPED
          START   - STARTING PRU NUMBER (DECIMAL)
                    0 OF OMITTED - START AT BEGINNING OF FILE
          NPRUS   - NUMBER (DECIMAL) OF PRUS TO BE DUMPED
                    (DEFAULT: 9999999 (ALL OF FILE))
          OUTPUT - LISTABLE OUTPUT
          REW   - INFILE REWIND OPTION
                    A   - REWIND AFTER USE
                    B   - REWIND BEFORE USE   (DEFAULT)
                    R   - REWIND BEFORE AND AFTER USE
                    U   - REWIND BEFORE, REWIND AND UNLOAD
                             AFTER USE
                    OTHER - NO REWIND
                    (ANY WORDS BEGINNING WITH THESE LETTERS
                    WILL PRODUCE THE SAME RESULTS)
          SUP   - CHARACTER PRINTING SUPPRESS OPTION
                    OMITTED OR SUP - SUPPRESS CHARACTERS WITH
                                     DISPLAY CODE 60B OR
                                     HIGHER (DEFAULT)
                    ANYTHING ELSE - PRINT ALL CHARACTERS
          CC   - CARRIAGE CONTROL OPTION
                    OMITTED OR 'CC' - PRINT DUMP ON NEW PAGE
                    ANYTHING ELSE   - PRINT DUMP ON SAME PAGE
          PRUS   - OMITTED OR 'OPRU' - PRINT OCTAL PRU COUNT
                    ANYTHING ELSE   - PRINT DECIMAL PRU COUNT
          WRDS   - OMITTED OR 'OWRD' - PRINT OCTAL WORD COUNT
                    ANYTHING ELSE   - PRINT DECIMAL WORD COUNT.
                    NOTE: WORD COUNT WITHIN PRU IS ALWAYS OCTAL.

     DEFAULT EXECUTE CARD
          PRUDMP,TAPE1,1,9999999,OUTPUT,BEFORE,SUP.

     FL NEEDED TO LOAD: 32000B
     FL NEEDED TO RUN : 23000B

  AUTHOR
     DAVID V SOMMER - DTNSRDC CODE 1892.2

  DATE WRITTEN: 05/24/76 - TOTAL REWRITE DUPLICATING AND
                           EXPANDING THE CAPABILITIES OF THE
                           SCOPE 3.3 PROGRAM WRITTEN BY MEL
                           HAAS - DTNSRDC CODE 1843

  DATE(S) REVISED

  LOCATION OF DECKS
     SOURCE
        UPDATE LIBRARY: UTILITYPL.ID=CSYS
     OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'PR2UP'

PURPOSE
    THIS PROGRAM IS INTENDED TO REFORMAT A SINGLE-COLUMN TEXT
    FILE COMPOSED OF 60-CHARACTER LINES INTO A 2-UP (DOUBLE-
    COLUMN) FORMAT HAVING MAXIMUM TOTAL LINE LENGTH OF 132
    PRINTABLE CHARACTERS (PLUS 1 POS FOR CARRIAGE CONTROL). THE
    OUTPUT WILL BE SUITABLE FOR PRINTING EITHER ON A LINE
    PRINTER OR ON XEROX-1200 8-1/2 X 11 PAPER.

    THE ORIGINAL MOTIVATION FOR WRITING PR2UP WAS TO ALLOW
    THE COMPUTER CENTER NOTES (DISTRIBUTED TO ALL USERS BY
    USER SERVICES) TO BE PRINTED ON THE XEROX-1200, 2-UP.

FUNCTIONAL CATEGORIES: M6   O1

LANGUAGE: COBOL 5

REMARKS
    INPUT FILE (ONEUP) CONSTRAINTS -
        1. REPORT LINES MUST NOT EXCEED 61 CHARACTERS
           INCLUDING CARRIAGE CONTROL CHARACTER.
        2. CHARACTER POSITION 1 OF EACH LINE MUST CONTAIN ONE
           OF THE FOLLOWING VALID CARRIAGE CONTROLS - '
               "1" - PAGE EJECT AND PRINT
               " " - SPACE 1 AND PRINT
               "0" - SPACE 2 AND PRINT
               "-" - SPACE 3 AND PRINT
        3. EACH PAGE IN THE ONEUP FILE BECOMES A
           60-CHARACTER-WIDE COLUMN (LEFT OR RIGHT) IN THE
           TWOUP FILE. ONEUP PAGE SIZE (I.E., VERTICAL LENGTH)
           CAN BE SPECIFIED BY SETTING CARRIAGE CONTROL = "1"
           (CHARACTER POSITION 1) ON EACH LINE WHICH BEGINS
           A NEW ONEUP PAGE. EACH OF THESE LINES WILL THEN BE
           FORCED TO LINE 1 OF THE NEXT TWOUP COLUMN (EITHER THE
           RIGHT COLUMN OF THE CURRENT PAGE OR THE LEFT COLUMN
           OF THE NEXT PAGE).

           A MAXIMUM OF 60 LINES (INCLUDING SKIPPED LINES)
           WILL BE PRINTED IN EACH TWOUP COLUMN. IF THE TWOUP
           LINE COUNT EXCEEDS 60 (DUE TO MISSING OR MISPLACED
           PAGE EJECT CHARACTER), THE "61ST" LINE WILL BE TREATED
           AS THOUGH IT CONTAINED A CARRIAGE-CONTROL = "1", AND
           IT WILL BE PRINTED AT THE TOP OF THE NEXT COLUMN.

```
EXECUTION
    FROM BATCH
        ATTACH,UTILITY.
        ATTACH,CBL5,461COBOL5,ID=CSYS.
        LIBRARY,UTILITY,CBL5.

            --IF 1-UP FILE CREATED IN PREVIOUS JOB--
        ATTACH,ONEUP,.....
            --IF 1-UP FILE (PRNT) CREATED EARLIER THIS JOB--
        FILE,ONEUP,LFN=PRNT.

        PR2UP.
        ROUTE,TWOUP,DC=PR,......           TO PRINTER OR XEROX-1200
        '   7/8/9      EOR
        XX      COLS 1-2 = NUMBER OF PAGES PER REPEATING SET.
        "   6/7/8/9    EOF


    FROM TTY
        CONNECT,INPUT,OUTPUT
        ATTACH,UTILITY.
        ATTACH,CBL5,461COBOL5,ID=CSYS.
        LIBRARY,UTILITY,CBL5.

            --IF 1-UP FILE CREATED IN PREVIOUS JOB--
        ATTACH,ONEUP,.....
            OR--IF 1-UP FILE (PRNT) CREATED EARLIER THIS JOB--
        FILE,ONEUP,LFN=PRNT

        PR2UP
        XX      (ENTER NUMBER PAGES PER SET AFTER "?" PROMPT)
        ROUTE,TWOUP,DC=PR,....

    EXECUTE CARD PARAMETERS
        PR2UP.

    DEFAULT EXECUTE CARD
        PR2UP.

    FL NEEDED TO LOAD: 35000B WORDS
    FL NEEDED TO RUN : 57000B WORDS

DATA CARD
    COL     CONTENTS
    -----   --------
    1-2     2-DIGIT NUMBER OF PAGES (01-99) IN EACH REPEATING
            OUTPUT SET (E.G., CENTER NOTES ARE USUALLY 1-3
            PAGES PER ADDRESSEE SET). IF ONEUP FILE IS ONE
            CONTINUOUS SET, SPECIFY EITHER EXACT PAGE COUNT
            ON ONEUP FILE OR ANY EVEN NUMBER TO ENSURE THAT
            BOTH COLUMNS OF EACH 2-UP PAGE ARE USED.

ERROR MESSAGES
    LINE DROPPED - (IMAGE OF DROPPED LINE)
        MESSAGE ISSUED WHEN AN INPUT LINE HAS AN INVALID
        CARRIAGE CONTROL CHARACTER IN COLUMN 1. THE LINE
        IS DROPPED.
```

```
INPUT UNITS
     LFN                                              USE
     -------    ---------------------------------------------------
     INPUT      DATA CARD INPUT.
     ONEUP      DISK FILE INPUT CONTAINING REPORT TO BE
                REFORMATTED.

OUTPUT UNITS
     LFN                                              USE
     -------    ---------------------------------------------------
     OUTPUT     STANDARD OUTPUT FILE CONTAINING ERROR MESSAGES.
     TWOUP      DISK FILE OUTPUT CONTAINING TWO 60-CHARACTER
                COLUMNS PER PAGE.


EXAMPLE (BATCH)
     REFORMAT (2-UP) A TEXT FILE HAVING REPEATING
     SETS OF 3 PAGES EACH. PRINT ON XEROX-1200.
        ATTACH,UTILITY.
        ATTACH,CBL5,461COBOL5,ID=CSYS.
        LIBRARY,UTILITY,CBL5.
        REWIND,PRNT.
        FILE,ONEUP,LFN=PRNT.
        PR2UP.
        ROUTE,TWOUP,TID=C,DC=PR,FC=HH.
        '    7/8/9      EOR
        03             << DATA CARD - PAGES PER SET
        "    6/7/8/9    EOF

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
     PART OF LANGUAGE
        NONE
     OTHERS
        NONE

AUTHOR
     CHARLES L. ORR - DTNSRDC CODE 1892.1

DATE WRITTEN: 02/02/79

DATE(S) REVISED
        07/29/80 - CLO-  CONVERT FROM COBOL4 TO COBOL5.
        09/15/80 - CLO-  ESTABLISH DEFAULT PAGE SIZE = 60.
        10/23/80 - ATS-  CHANGE PROGRAM-ID TO 'PR2UP'.

LOCATION OF DECKS
     SOURCE
        UPDATE LIBRARY:   UTILITYPL,ID=CSYS
     OBJECT
        EDITLIB USER LIBRARY:   UTILITY
```

```
PROGRAM 'PTIM'

PURPOSE
    PRINT CPA, CPB, CPA+CPB, IO AND PP TIMES SINCE START OF JOB
    OR INTERCOM SESSION

FUNCTIONAL CATEGORIES:  QO

REMARKS
    OUTPUT FILE WILL BE CONNECTED.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CONNEC
    OTHERS
        ALTIME  - OBTAIN TIMES

LANGUAGE: FORTRAN IV

OUTPUT UNITS
    UNIT  #      LFN                              USE
                 OUTPUT    LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        ATTACH.UTILITY.
        LDSET.LIB=UTILITY.
        PTIM.

    FROM TTY
        ATTACH.UTILITY.
        LIBRARY.UTILITY.
        PTIM.

    EXECUTE CARD PARAMETERS
        PTIM.OUTPUT.
            OUTPUT  - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        PTIM,OUTPUT.

    FL NEEDED TO LOAD: 22000B
    FL NEEDED TO RUN : 13000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 01/08/76

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:  UTILITYPL.ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'PURPOSE'

PURPOSE
    EXTRACT PURPOSE INFORMATION FROM DOCUMENTATION FILES
    (WHICH WERE PREPARED IN THE FORMAT GENERATED BY PROGRAM
    'DOC')

FUNCTIONAL CATEGORIES: S0 Q6

REMARKS
    DOCUMENTATION FILE IS COMPATIBLE WITH AN UPDATE 'SOURCE'
    FILE OF *DECK'S ONLY.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   DATE   EOF   OR   RECOVR
        REMARK   SHIFT   TIME
    PART OF PROGRAM
        EOJ   - ABNORMAL TERMINATION ROUTINE
    OTHERS
        GETLFNS - GET ACTUAL FILE NAMES
        PAKLFT - SQUEEZE BLANKS AND ZEROS OUT OF PFN
        UNLOAD - RETURN,TAPE1.
        ZPFUNC - ATTACH DOCUMENTATION FILE

ARITHMETIC STATEMENT FUNCTIONS
    L11FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L61FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L77FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    R92FMT - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
1	ZZDOC	FILE CONTAINING DOCUMENTATION (ATTACHED AND RETURNED WITHIN PROGRAM) (IF THE USER REPLACES THE FILE NAME AT EXECUTION TIME, THE FILE IS ASSUMED TO BE ALREADY ATTACHED AND WILL NOT BE RETURNED)
	OUTPUT	LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        BEGIN,UTILITY,,PURPOSE,LIBRARY,ID.

    FROM TTY
        BEGIN,UTILITY,,PURPOSE,LIBRARY,ID,ANY,.....
        ROUTE,ANY.DC=PR,.....

```
EXECUTE CARD PARAMETERS
    PURPOSE,LIBRARY,ID,OUTPUT,LEFT,DOCFILE.
        LIBRARY - NAME OF LIBRARY TO BE EXTRACTED
                  MAY BE ONE OF:
                      NSRDC
                      UTILITY (DEFAULT)
                      ANY OTHER LIBRARY NAME (1-7 CHAR)
                  PROGRAM WILL ATTACH AND RETURN THE
                  DOCUMENTATION FILE.  THE PFN USED WILL BE
                  THE LIBRARY NAME SPECIFIED, FOLLOWED BY
                  'DOCUMENTATION'   (DEFAULT IS
                  'UTILITYDOCUMENTATION')
        ID      - ID UNDER WHICH DOCUMENTATION IS CATALOGED
                  (DEFAULT IS THE SYSTEM PUBLIC ACCESS ID)
        OUTPUT  - LISTABLE OUTPUT
        LEFT    - PRINT CENTERING
                  OMITTED OR 'LEFT' - LEFT-JUSTIFIED ON PAGE
                  ANYTHING ELSE     - CENTERED ON LARGE PAGE
                  (DEFAULT IS LEFT-JUSTIFIED)
        DOCFILE - IF USER HAS PREVIOUSLY ATTACHED A
                  DOCUMENTATION FILE, PLACE LFN HERE AND OMIT
                  THE FIRST 2 PARAMETERS ('LIBRARY' AND 'ID').
                  WHEN THIS PARAMETER IS USED AND IS NOT
                  'ZZDOC', THE FILE IS NOT RETURNED AT END OF
                  EXECUTION.

    DEFAULT EXECUTE CARD
        PURPOSE,UTILITY,*---*,OUTPUT,LEFT,ZZDOC.

    FL NEEDED TO LOAD: 31000B
    FL NEEDED TO RUN : 21000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 08/04/75

DATE(S) REVISED
    05/05/76
    05/18/76

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'REDECK'

PURPOSE
    CHANGE AN UPDATE COMPILE FILE BACK INTO A SOURCE FILE

FUNCTIONAL CATEGORIES: Q7

REMARKS
    *DECK CARDS ARE ADDED BEFORE EACH DECK.
    UPDATE SEQUENCING IS REMOVED.

    A NEW DECK BEGINS:
        A) AFTER END-OF-SECTION OR END-OF-PARTITION:
        B) WITH CHANGE OF DECK (COL 74-82) ONLY IF PREVIOUS
           CARD WAS FORTRAN END CARD ('   END   ' IN
           COL 1-20) OR COMPASS END CARD ('END ' IN COL 11-14).
    THE CONDITIONS FOR B) ALLOW DECKS TO HAVE *COMDECK CALLS
    WITHOUT TRIGGERING A NEW DECK. (*COMDECK CALLS HAVE THE
    COMDECK NAME IN 74-82, WHICH IS USUALLY DIFFERENT FROM THE
    MAIN DECK NAME.)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        CLOSEM
        FILESQ
        GET
        IFETCH
        OPENM
        PUT
        RECOVR
        REMARK
        SHIFT
        STOREF
    OTHERS
        EOJ   - ABNORMAL TERMINATION ROUTINE
        GETLFNS - GET ACTUAL LOCAL FILE NAMES
        REDUCE   - REDUCE CORE TO MINIMUM NEEDED TO RUN
        REQUEST - REQUEST,TAPE2,*PF.

ARITHMETIC STATEMENT FUNCTIONS
    A21FMT - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    A55FMT - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    A94FMT - FAST A-FORMAT DECODE (LEFT-ADJ, BLANK-FILLED)
    L11FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L41FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    L81FMT - FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
    R41FMT - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

INPUT/OUTPUT UNITS

FORTRAN LOGICAL UNIT	LOCAL FILE NAME	USE
	TAPE1	INPUT COMPILE FILE
	TAPE2	OUTPUT SOURCE FILE
	OUTPUT	LISTABLE OUTPUT (DECK NAMES)
	DAYFILE	TOTAL NUMBER OF DECKS

```
EXECUTION
    FROM BATCH AND TTY
        ATTACH,OLDPL,...
        UPDATE,P,...
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        REDECK,COMPILE.
        (CATALOG,TAPE2,....)

    EXECUTE CARD PARAMETERS
        REDECK,INFILE,OUTFILE,REW,OUTPUT.
            INFILE  - INPUT COMPILE FILE
            OUTFILE - OUTPUT SOURCE FILE
            REW     - TAPE1 REWIND OPTION
                    A     - REWIND AFTER USE
                    B     - REWIND BEFORE USE
                    R     - REWIND BEFORE AND AFTER USE
                    U     - REWIND BEFORE, REWIND AND UNLOAD
                              AFTER USE
                    OTHER - NO REWIND (DEFAULT)
                    (ANY WORDS BEGINNING WITH THESE LETTERS WILL
                    PRODUCE THE SAME RESULTS)
            OUTPUT  - LISTABLE OUTPUT (DECK NAMES)

    DEFAULT EXECUTE CARD
        REDECK,TAPE1,TAPE2,NOREW,OUTPUT.

    FL NEEDED TO LOAD: 27000B
        (PROGRAM REDUCES TO MINIMUM NEEDED TO RUN)

AUTHOR
    DAVID V SOMMER - NSRDC CODE 1892.2

DATE WRITTEN: 06/30/75

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:  UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'SORTUP'

PURPOSE
    GENERATE UPDATE DIRECTIVES TO SORT OLDPL

FUNCTIONAL CATEGORIES: Q7

REMARKS
    THIS UTILITY ALLOWS A USER TO SORT THE DECKS IN HIS UPDATE
    LIBRARY TO BE IN ALPHABETICAL ORDER.   THE PRODUCT IS THE
    NECESSARY UPDATE '*MOVE' DIRECTIVES.   A SORTED LIST OF EACH
    PARTITION IS ALSO PROVIDED.

    'SOURCE' AND 'TAPE7' ARE NOT REWOUND.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   EOF   OR   REMARK   SHIFT
    OTHERS
        PAKLFT - SQUEEZE LEFT AND REMOVE BLANKS
        SSORTL - SORT DECK NAMES

ARITHMETIC STATEMENT FUNCTIONS
    NROWS - COMPUTE # OF ROWS IN PRINTOUT OF SORTED DECK NAMED

METHOD
    THE SOURCE FILE (FROM 'UPDATE,P,F,S.') IS READ AND ALL *DECK
    AND *COMDECK CARDS ARE DETECTED.   THE DECK NAMES ARE CHECKED
    FOR SPECIAL CHARACTERS.   IF THE DECK NAME HAS SPECIAL
    CHARACTERS, IT IS CONSIDERED A DELIMITER DIVIDING THE
    LIBRARY INTO LOGICAL PARTITIONS; OTHERWISE, THE NAME IS
    ADDED TO THE LIST OF NAMES IN THAT PARTITION.   UPON
    ENCOUNTERING THE END OF THE PARTITION, '*MOVE' CARDS ARE
    WRITTEN ON 'TAPE7' TO SORT THE DECKS IN THAT PARTITION.

    UPDATING THE OLDPL WITH THESE DIRECTIVES WILL CAUSE THE
    OLDPL TO BECOME SORTED ALPHABETICALLY.

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
1	SOURCE	SOURCE FILE FROM 'UPDATE,P,F,S.'
7	TAPE7	WILL CONTAIN '*MOVE' DIRECTIVES (TO BE USED AS INPUT TO 'UPDATE')
	OUTPUT	LISTABLE OUTPUT CONTAINING STATISTICS OF RUN AND SORTED LIST·S)

```
EXECUTION
    FROM BATCH
        ATTACH,OLDPL,....
        UPDATE,P,F,S.
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        SORTUP.
        REQUEST,NEWPL,*PF.
        REWIND,TAPE7.
        UPDATE,P,N,I=TAPE7.
        CATALOG,NEWPL,....

    FROM TTY
        ATTACH,OLDPL,....
        UPDATE,P,F,S,O=OUT.
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        SORTUP,,,OUT.
        REQUEST,NEWPL,*PF.
        REWIND,TAPE7.
        UPDATE,P,N,I=TAPE7,O=OUT.
        CATALOG,NEWPL,....
        DISPOSE,OUT,PR=XYY.

    EXECUTE CARD PARAMETERS
        SORTUP,INFILE,MOVEDIR,OUTPUT.
            INFILE  - INPUT FILE (UPDATE SOURCE FILE)
            MOVEDIR - OUTPUT FILE OF *MOVE DIRECTIVES
            OUTPUT  - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        SORTUP,SOURCE,TAPE7,OUTPUT.

    FL NEEDED TO LOAD: 27000B
    FL NEEDED TO RUN : 17000B

AUTHOR
    C FLINK - KPS NWL

DATE WRITTEN: 09/26/73

DATE(S) REVISED
    11/29/73 - V1.1 - DAVID V SOMMER - NSRDC CODE 1892.2
    03/17/75

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:   UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:  UTILITY
```

PROGRAM 'S2KRNM'

PURPOSE
RENAME ACCOUNT NUMBER ON CATALOGED S2000 DATA BASE FILES

FUNCTIONAL CATEGORIES: Q0

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
PROGRAM ATTACHES AND DOES A RENAME ON EACH OF THE SIX FILES
FOR A GIVEN DATA BASE. ONLY THE ACCOUNT FIELD IS CHANGED.

USER DOES NOT HAVE TO KNOW THE S2000 PASSWORDS.

PROGRAM USES 'TAPE77' AS A WORK FILE.

EXECUTION
FROM BATCH
ATTACH,UTILITY.
LIBRARY,UTILITY.
S2KRNM.
'   7/8/9   EOR
<DATA-BASE-NAME>   (1-20 CHARACTERS)
<USER-ID>   (1-7 CHARACTERS)
<NEW-ACCOUNT-NUMBER>   (10 CHARACTERS)
"   6/7/8/9   EOF

FROM TTY
CONNECT,INPUT,OUTPUT
BEGIN,UTILITY,,S2KRNM
(PROGRAM WILL PROMPT FOR DATA BASE NAME, USER ID,
AND ACCOUNT NUMBER)

FL NEEDED TO LOAD: 31000B
FL NEEDED TO RUN : 20000B

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
PART OF LANGUAGE
REMARK
OTHERS
IPAKLFT - SQUEEZE LEFT AND REMOVE BLANKS
MOVSTR   - MOVE CHARACTER STRING
UNLOAD   - RETURN FILE
ZPFUNC   - ATTACH AND RENAME FUNCTIONS

```
AUTHOR
    BRUCE D BLACK - DTNSRDC CODE 1892.1    (CDC)
    SHARON GOOD   - DTNSRDC CODE 1892.1

DATE WRITTEN: 12/15/77

DATE(S) REVISED
    03/15/79 - CORRECT AC, PW PLACEMENT (SG)

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    SPECIALPL,ID=*---*,PW=*---*
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'TAPDMP'

PURPOSE
    DUMP SELECTED PORTIONS OF A 7-TRACK MAGNETIC TAPE WRITTEN IN
    AN UNKNOWN DENSITY AND/OR MODE. IT IS CONTROLLED BY A
    SERIES OF FREE-FIELD CONTROL CARDS CONTAINING ORDERS FOR THE
    DUMPING, SKIPPING OR BACKSPACING OF RECORDS OR FILES.

FUNCTIONAL CATEGORIES: J9 K4

EXAMPLE
    DUMP THE FIRST 2 AND LAST 2 RECORDS OF A FILE:

        CXXX,MT1.   NAME/CODE
        CHARGE CARD
        VSN,DTAPE=SLOTXX=EXTID.
        REQUEST,DTAPE,HY,NORING.
        ATTACH,UTILITY.
        LDSET,LIB=UTILITY.
        TAPDMP.
        '   7/8/9   EOR
        DUMP 2 RECORDS. SKIP 1 FILE.
        BACKSPACE 2 RECORDS. DUMP 2 RECORDS.
        "   6/7/8/9   EOF

    NOTE: THE DATA CARD COULD HAVE BEEN ABBREVIATED AS:
            D 2 R. S 1 F. B 2 R. D 2 R.

    NOTE: OUTPUT WILL BE UP TO 4096 LINES. TO CHANGE THIS, USE
            TAPDMP(LC=NNNNNNN) WHERE NNNNNNN IS THE NEW LINE
            COUNT LIMIT (1-9999999).

DATA CARDS
    DATA CARDS ARE PUNCHED IN FREE FORM WITH THE FIELDS
    SEPARATED BY BLANKS AND THE COMMANDS SEPARATED BY PERIODS.
    ANY NUMBER OF COMMANDS MAY APPEAR ON A CARD, BUT COMMANDS
    MAY NOT BE SPLIT ACROSS CARDS. THE FULL COMMAND, OR ITS
    ABBREVIATION, IS OBEYED UNTIL ONE OF THE FOLLOWING
    CONDITIONS:
        1) THE END OF THE COMMAND STRING;
        2) AN END-OF-TAPE CONDITION IS DETECTED;
        3) AN INVALID COMMAND IS ENCOUNTERED.

COMMANDS
    COMMANDS CONTAIN 1, 2 OR 3 FIELDS AND ARE SUMMARIZED, WITH
    ABBREVIATIONS, IN THE TABLE BELOW:

FIELD 1	ABBR.	FIELD 2	FIELD 3	ABBR.
DUMP	D	N	RECORD(S)/FILE(S)	R/F
PRINT	P	N	DITTO	
INTERPRET	I	N	DITTO	
SKIP	S	N	DITTO	
BACKSPACE	B	N	DITTO	
EXPECT	E	200/556/800	BINARY/CODED	B/C
NAME=	N=	FILENAME	,NOREWIND	,N
ALL	A			
REWIND	R			

```
COMMAND ACTION
    DUMP         - CODED READ: TAPE CONTENTS PRINTED AS A HOLLERITH
                   STRING WITH EACH POSITION COUNT SHOWN.
                   BINARY READ: TAPE CONTENTS PRINTED AS OCTAL
                   WORDS.

                   EACH RECORD HAS A HEADER SHOWING ITS RECORD AND
                   FILE NUMBER ON THE TAPE.

    PRINT        - CODED READ: SAME AS DUMP.
                   BINARY READ: CONTENTS PRINTED IN HOLLERITH.
                   TO PREVENT PROBLEMS WITH EMBEDDED BINARY ZEROS.
                   THESE ARE CHANGED TO BLANKS BEFORE PRINTING.

    INTERPRET    - CODED READ: SAME AS DUMP.
                   BINARY READ: PRINTED IN OCTAL AND HOLLERITH. AS
                   IN THE PRINT COMMAND.

    SKIP         - SKIP DESIGNATED NUMBER OF RECORDS OR FILES.  ALL
                   RECORDS READ ARE FULLY CHECKED FOR READABILITY
                   AND ARE TALLIED IN THE RECORD AND FILE COUNT.
                   BUT WILL NOT BE PRINTED UNDER ANY CONDITION.

    BACKSPACE    - BACKSPACE SPECIFIED NUMBER OF RECORDS OR FILES.
                   IF A FILE MARK OR BEGINNING OF TAPE IS
                   ENCOUNTERED WHILE BACKSPACING. TAPE MOTION STOPS
                   WITH THE TAPE POSITIONED AHEAD OF THE FILE MARK.

    EXPECT       - IF THE USER KNOWS THE MODE AND/OR DENSITY USED
                   TO WRITE THE TAPE. THE FIRST READ CONDITIONS
                   USED BY "TAPDMP" CAN BE SET WITH THE EXPECT
                   COMMAND.  THIS WILL ALSO DETERMINE THE MODE AND
                   DENSITY USED TO PRINT A RECORD IN CASE AN
                   UNRECOVERABLE PARITY ERROR IS ENCOUNTERED.

    NAME=        - THIS COMMAND ALLOWS THE USER TO OVERRIDE THE
                   DEFAULT FILENAME (DTAPE).  THUS. MANY TAPES CAN
                   BE DUMPED IN ONE EXECUTION OF THE PROGRAM.

                   THE THIRD FIELD (NOREWIND) IS USED TO INHIBIT
                   THE INITIAL REWIND ON THE TAPE BEING DUMPED.  IN
                   THIS CASE, REVERSE MOTION OF THE TAPE WILL CAUSE
                   THE FIRST RECORD AND FILE TO HAVE ORDINALS OF -1
                   ASSIGNED, SINCE THE STARTING NUMBERS MUST BE
                   RELATIVE TO THE STARTING POSITION OF THE TAPE.

    ALL          - NORMALLY, "TAPDMP" WILL IGNORE SYSTEM NOISE
                   RECORDS INTRODUCED AS A RESULT OF RECOVERED
                   WRITE ERRORS.  THIS WILL GIVE THE USER A TRUE
                   COUNT OF HIS DATA RECORDS.  IF IT IS DESIRED TO
                   CHECK FOR THE POSSIBLE PRESENCE OF THESE NOISE
                   RECORDS. THE "ALL" COMMAND MAY BE ISSUED TO
                   TALLY EACH PRU OF THE TAPE REGARDLESS OF ITS
                   CONTENT.  ONCE ISSUED. THIS COMMAND MAY NOT BE
                   TURNED OFF.

    REWIND       - REWIND THE TAPE BEING DUMPED.
```

DEFAULT SETTINGS
1) NAME=DTAPE.
2) ALL FILES BEING DUMPED ARE INITIALLY REWOUND UNLESS "NOREWIND" IS SPECIFIED ON THE "NAME=" COMMAND.
3) IF NO CONTROL CARDS, "DUMP 5 RECORDS." IS ASSUMED.
4) IF A PROBABLE SYSTEM LABEL IS FOUND, THE USER IS INFORMED AND THE LABEL FILE IS INCLUDED IN THE RECORD AND FILE COUNTS.
5) THE USER MAY NOT SPECIFY THE KIND OF FILE MARK USED TO DELIMIT FILES. "TAPDMP" WILL INFORM THE USER WHETHER IT HAS FOUND A SCOPE EOF (LEVEL 17 8-CHARACTER PRU) OR A TAPE MARK.

LIMITATIONS
1) ONLY THE FIRST 50 COMMANDS WILL BE PROCESSED.
2) ONLY 50 FILES PER TAPE CAN BE HANDLED PROPERLY. IF MORE ARE PRESENT, RECORD COUNTS WITHIN THESE FILES CANNOT BE HELD.
3) WILL NOT OBEY A COMMAND REQUIRING FORWARD MOTION IF IT HAS FOUND AN EOT REFLECTIVE MARKER AS A RESULT OF COMPLETING THE PREVIOUS COMMAND. SUCH FORWARD POSITIONING WILL ABORT THE RUN.
4) THERE IS NO EFFECTIVE LIMITATION ON THE SIZE OF BLOCK WHICH MAY BE DUMPED. "TAPDMP" WILL OBTAIN MORE STORAGE AS NEEDED FOR BUFFER SPACE.
5) DENSITY DETERMINATION CANNOT BE DONE WITH CONFIDENCE BETWEEN 556 AND 800 BPI, AS A READ SETTING OF 800 WILL ALSO READ MOST TAPES WRITTEN AT 556 BPI. TO REDUCE THIS PROBLEM AS MUCH AS POSSIBLE, "TAPDMP" TRIES 556 BPI FIRST BEFORE SWITCHING TO ANOTHER DENSITY.
6) SUPPORTS ONLY MODEL 657 TAPE DRIVES. NOT USABLE ON THE CYBER 74 WHICH HAS MODEL 677 TAPE DRIVES.

REMARKS
1) IF A NEW TAPE IS DUMPED, IT MAY RUN OFF THE END OF THE REEL.

LANGUAGE: RUN FORTRAN AND CDC 6000 CP AND PP COMPASS

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
99	INPUT	INPUT FILE OF COMMANDS
	OUTPUT	LISTABLE OUTPUT

```
EXECUTION
    FROM BATCH
        ...CARDS TO MOUNT TAPE
        BEGIN,UTILITY,,TAPDMP.
        '      7/8/9    EOR
            (COMMANDS)
        "   6/7/8/9    EOF

    FROM TTY
        CANNOT BE RUN FROM TTY

    EXECUTE CARD PARAMETERS
        TAPDMP,INPUT,OUTPUT.
            INPUT   - INPUT FILE OF COMMANDS
            OUTPUT  - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        TAPDMP,INPUT,OUTPUT.

    FL NEEDED TO LOAD: 25000B
    FL NEEDED TO RUN : 15000B
        (PROGRAM ADJUSTS CORE UP AND DOWN AS REQUIRED)

AUTHOR
    R. S. SMITH

DATE WRITTEN: APRIL, 1972

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY:    UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY:    UTILITY
```

PROGRAM 'TAPLIST'

PURPOSE
    PREPARE TWO LISTS FROM MAGTAPEDOCUMENTATION FILE:
        1) LIST OF TAPE NUMBER, LABEL, DENSITY, REMARKS AND
           DESCRIPTION FOR EACH TAPE DOCUMENTED IN FILE
        2) LIST OF TAPE NUMBERS AND LABELS

FUNCTIONAL CATEGORIES: S0   Q6

LANGUAGE: FORTRAN IV

REMARKS
    INFORMATION IS EXTRACTED FROM A FILE OF DOCUMENTS WHICH
    ARE IN THE FORMAT GENERATED BY PROGRAM 'MTDOC' AND CATALOGED
    AS 'MAGTAPEDOCUMENTATION,ID=CXXX', WHERE CXXX' IS
    SUPPLIED TO THE PROGRAM.

EXECUTION
    FROM BATCH
        BEGIN.UTILITY..TAPLIST,CXXX.

    FROM TTY
        BEGIN.UTILITY..TAPLIST,CXXX,OUT.
        ROUTE,OUT,DC=PR.....

    EXECUTE CARD PARAMETERS
        TAPLIST,ID,OUTPUT,LEFT.
            ID   - ID UNDER WHICH PFN MAGTAPEDOCUMENTATION
                        IS CATALOGED
            OUTPUT   - LISTABLE OUTPUT
            LEFT   - CENTERING OPTION
                        OMITTED OR LEFT - PRINT LEFT-JUSTIFIED
                        ANYTHING ELSE   - PRINT CENTERED ON WIDE
                                          PAGE

    DEFAULT EXECUTE CARD
        TAPLIST,*,OUTPUT,LEFT.
            * - USER MUST SUPPLY

    FL NEEDED TO LOAD: 32000B
    FL NEEDED TO RUN : 22000B
        (PROGRAM ADJUSTS CORE AS REQUIRED)

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	OUTPUT	LISTABLE OUTPUT
1	ZZDOC	DOCUMENTATION FILE (ATTACHED AND RETURNED BY PROGRAM)

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      DATE   EOF   MINO   MOD   RECOVR
      REMARK   SHIFT   TIME
   PART OF PROGRAM
      EOJ   - ABNORMAL TERMINATION ROUTINE
      PRT   - PRINT REMARKS AND DESCRIPTION SECTIONS
   OTHERS
      EQU60   - COMPARE 2 ARRAYS
      GETLFNS - GET ACTUAL LOCAL FILE NAMES
      REDUCE   - ADJUST CORE UP AND DOWN AS REQUIRED
      UNLOAD   - RETURN,ZZDOC.
      VFILL   - FILL ARRAY WITH WORD
      ZPFUNC   - ATTACH,ZZDOC,MAGTAPEDOCUMENTATION,ID=CXXX.

ARITHMETIC STATEMENT FUNCTIONS
   NONE

AUTHOR
   DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 10/06/76

DATE(S) REVISED

LOCATION OF DECKS
   SOURCE
      UPDATE LIBRARY: UTILITYPL,ID=CSYS
   OBJECT
      EDITLIB USER LIBRARY: UTILITY

PROGRAM 'UNDOCIT'

PURPOSE
    REMOVE THE PAGING WHICH WAS ADDED TO DOCUMENT(S) BY PROGRAM
    'DOCIT'

FUNCTIONAL CATEGORIES: Q6

LANGUAGE: FORTRAN IV EXTENDED

REMARKS
    A SINGLE DOCUMENT MAY BE PRECEDED BY A *DECK CARD.
    MULTIPLE DOCUMENTS SHOULD EACH BE PRECEDED BY A *DECK CARD.

EXECUTION
    FROM BATCH
        NOT DESIGNED FOR BATCH USE

    FROM TTY
        CONNECT,OUTPUT
        ATTACH,UTILITY.
        LIBRARY,UTILITY.
        PROGDOC,MYLIB,XXXX,PROG,OLD.
           (GET EXISTING DOCUMENT 'PROG' FROM DOCUMENT FILE
           HAVING PFN=MYLIBDOCUMENTATION, ID=XXXX, AND PUT INTO
           FILE 'OLD'.)
        UNDOCIT,OLD,OLD1.
           (REMOVE OLD PAGING)
        EDITOR
        EDIT,OLD1,SAVE
           (MAKE CHANGES DESIRED, INCLUDING RESTRUCTURING OF
           PAGES. INDICATE START OF EACH PAGE BY PUTTING A
           '1' IN COLUMN 1 OF EACH LINE WHICH IS TO BE THE FIRST
           LINE OF A PAGE.)
        SAVE,NEWDOC,NOSEQ
           (NETED,OLD1 COULD ALSO BE USED INSTEAD OF EDITOR/EDIT/
           SAVE/BYE)
        LINER,NEWDOC.
           (WILL COUNT PAGES AND NUMBER OF LINES PER PAGE. IF
           ANY PAGE HAS MORE THAN 59 LINES, GO BACK AND
           RESTRUCTURE.)
        BYE
        DOCIT,NEWDOC,FILE.
           (PUT PAGING BACK ON)
        BEGIN,DOCREPL,,MYLIB,XXXX,PROG,,FILE,AC,PW1,PW2,PW3,PW4,
        PW5.
           (REPLACE DOCUMENT 'PROG' ON FILE HAVING
           PFN=MYLIBDOCUMENTATION, ID=XXXX. SUPPLY AC, PW1,
           PW2,PW3,PW4,PW5, IF REQUIRED.)

    EXECUTE CARD PARAMETERS
        UNDOCIT,INFILE,OUTFILE,OUTPUT.
           INFILE - INPUT DOCUMENT
           OUTFILE - OUTPUT DOCUMENT
           OUTPUT - LISTABLE OUTPUT (FTN ERROR MESSAGES)

    DEFAULT EXECUTE CARD
        UNDOCIT,TAPE1,TAPE2,OUTPUT.

DEFAULT PL: 5000 LINES

FL NEEDED TO LOAD: 34000B
FL NEEDED TO RUN : 24000B
   (PROGRAM ADJUSTS CORE AS REQUIRED)

INPUT/OUTPUT UNITS

UNIT #	LFN	USE
	DAYFILE	FOR EACH DOCUMENT (AND TOTAL), NUMBER OF CARDS IN AND OUT
	OUTPUT	LISTABLE OUTPUT (FTN ERROR MESSAGES)
	TAPE1	INPUT DOCUMENT
	TAPE2	OUTPUT DOCUMENT

METHOD
   THE DOCUMENT IS READ ONE PAGE AT A TIME. IF THE LAST LINE
   HAS '/' IN COLUMN 4, IT IS REMOVED, AS ARE ANY LINES
   IMMEDIATELY PRECEDING IT WHICH CONTAIN A 'O' IN COLUMN 1
   AND BLANKS IN THE REST OF THE LINE.

   A COUNT OF THE RECORDS IN AND OUT IS PUT INTO THE DAYFILE.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
   PART OF LANGUAGE
      AND   CLOSEM   FILESQ   GET   IFETCH
      MOVLEV   OPENM   OR   PUT   RECOVR
      REMARK   REWND   SHIFT
   PART OF PROGRAM
      DFMSG   - DAYFILE MESSAGE WRITER
      ENDIT   - CLOSE PROGRAM
      EOJ   - ABNORMAL TERMINATION ROUTINE
      INITAPE - INITIALIZE FILES
      INITLIZ - INITIALIZE PROGRAM
      PROCESS - MAIN PROCESSING ROUTINE
      UNDO   - REMOVE BOTTOM OF PAGE AND OUTPUT THE PAGE
   OTHERS
      EQU60   - COMPARE TWO ARRAYS
      GETLFNS - GET ACTUAL LOCAL FILE NAMES
      REQUEST - REQUEST,TAPE2,*PF.

ARITHMETIC STATEMENT FUNCTIONS
   FAST L-FORMAT DECODE (LEFT-ADJ, ZERO-FILLED)
      L61FMT   L71FMT   L75FMT   L77FMT
   FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)
      R14FMT

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 10/28/76

DATE(S) REVISED
    12/06/77 - FIX PROGRAM NAME IN MESSAGES
    04/28/78 - ALLOW *DECK CARDS AND MULTIPLE DOCUMENTS

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'WHATLIB'

PURPOSE
    LIST LIBRARIES SPECIFIED ON LAST LIBRARY CARD

FUNCTIONAL CATEGORIES: Q0

REMARKS
    NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        AND   DATE   TIME
    OTHERS
        RCPA   - READ CONTROL POINT AREA

ARITHMETIC STATEMENT FUNCTIONS
    R1FMT   - FAST R-FORMAT DECODE (RIGHT-ADJ, ZERO-FILLED)

LANGUAGE: FORTRAN IV

OUTPUT UNIT

UNIT #	LFN	USE
	OUTPUT	LISTABLE OUTPUT

EXECUTION
    FROM BATCH
        OF LIMITED USE IN BATCH
            BEGIN,UTILITY,,WHATLIB.

    FROM TTY
        CONNECT,OUTPUT
        BEGIN,UTILITY,,WHATLIB.

    EXECUTE CARD PARAMETERS
        WHATLIB,OUTPUT.
            OUTPUT - LISTABLE OUTPUT

    DEFAULT EXECUTE CARD
        WHATLIB,OUTPUT.

    FL NEEDED TO LOAD: 23000B
    FL NEEDED TO RUN : 13000B

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 1975

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'WHICHMF'

PURPOSE
    TELL INTERACTIVE USER OR BATCH JOB WHICH MAINFRAME IS BEING
    USED

FUNCTIONAL CATEGORIES: Q0

LANGUAGE: CDC 6000 CP COMPASS

COMPUTERS
    CDC 6000

REMARKS
    NONE

EXECUTION
    FROM BATCH AND TTY
        BEGIN,UTILITY.,WHICHMF.

    DEFAULT EXECUTE CARD
        WHICHMF.

    FL NEEDED TO LOAD: 11000B
    FL NEEDED TO RUN : 300B

OUTPUT UNIT

UNIT #	LFN	USE
	DAYFILE	OUTPUT MESSAGE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        NONE
    OTHERS
        MACHINE - GET BATCH USER DAYFILE HEADING

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/18/75

DATE(S) REVISED
    08/24/77 - CHANGE NAME FROM WHICHCP TO WHICHMF
               ADD MFA/MFB/MFC TO MESSAGE
    08/18/80 - ADD CY74/MFD

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

PROGRAM 'WHICHOS'

PURPOSE
    TELL INTERACTIVE USER OR BATCH JOB WHICH OPERATING SYSTEM IS
    BEING USED

FUNCTIONAL CATEGORIES: Q0

LANGUAGE: CDC 6000 CP COMPASS

COMPUTERS
    CDC 6000

REMARKS
    NONE

EXECUTION
    FROM BATCH AND TTY
        BEGIN,UTILITY,,WHICHOS.

    DEFAULT EXECUTE CARD
        WHICHOS.

    FL NEEDED TO LOAD: 11000B
    FL NEEDED TO RUN : 300B

OUTPUT UNIT
    UNIT #   LFN   USE
    -------   -------   --
                DAYFILE   OUTPUT MESSAGE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
    PART OF LANGUAGE
        NONE
    OTHERS
        MACHINE - GET BATCH USER DAYFILE HEADING

AUTHOR
    DAVID V SOMMER - DTNSRDC CODE 1892.2

DATE WRITTEN: 04/18/75

DATE(S) REVISED

LOCATION OF DECKS
    SOURCE
        UPDATE LIBRARY: UTILITYPL,ID=CSYS
    OBJECT
        EDITLIB USER LIBRARY: UTILITY

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